October 18, 2007

Distributed electronically

AESO Stakeholders
AESO 2007 GTA Proceeding Participants

Dear Stakeholder:

Re: **Changes to AESO Procurement of ILRAS Service — Discussion Paper**

The AESO invites stakeholders to provide feedback on recommendations for changes to the procurement of Interruptible Load Remedial Action Scheme (ILRAS) service, as discussed in the attached paper.

An Interruptible Load Remedial Action Scheme (ILRAS) has been used since 1998 to enhance the reliability of the Alberta transmission system as well as to increase access to additional supply capacity and energy for Alberta. To date, FortisAlberta has been the sole provider of the service. In December 2006, FortisAlberta notified the AESO it wished to terminate the ILRAS agreement, although a subsequent agreement permits the AESO to utilize ILRAS under supply shortfall conditions only until February 2008.

The AESO issued an invitation for Expressions of Interest (EOI) in early December 2006 for ILRAS service. Based on that process, the AESO has determined that the service is not contestable and can not be competitively procured. The AESO has therefore developed recommendations to procure ILRAS service as a regulated service, as detailed in the discussion paper.

Given the expiry of the current agreement with FortisAlberta in February 2008, there is some urgency to getting a replacement procurement process in place. The AESO proposes a single round of stakeholder comments on the attached discussion paper, including AESO responses to comments. The AESO then intends to apply to the Alberta Energy and Utilities Board (EUB) for approval of changes to ILRAS service procurement, including related tariff provisions. To support its application to the EUB, the AESO proposes to provide stakeholder comments and the AESO's responses as an appendix to the application.

The AESO proposes the following schedule for this consultation process:

- Wed, Oct 18, 2007 Discussion paper posted.
- Fri, Nov 9, 2007 Stakeholder comments received.

2500, 330 - 5th Ave SW Calgary, Alberta T2P 0L4
t (403) 539-2450 | f (403) 539-2949 | **www.aeso.ca**

- Thu, Nov 15, 2007 AESO responses to comments posted.

- Mon, Nov 26, 2007 Application submitted to EUB.

The AESO believes this consultation can be conducted as a written process. However, if stakeholders believe the process would be enhanced by a consultation meeting or have other comments on the consultation process, please let me know as soon as possible and consideration will be given to including a meeting or other suggested changes in the process.

Please provide comments on the discussion paper by Friday, November 9, 2007, using the attached comment form. All comments will be posted on the AESO web site at www.aeso.ca, accessible by following the path Tariff ▶ Current Consultations ▶ ILRAS Procurement. Please submit comments to john.martin@aeso.ca.

If you have any questions on these comments or need additional information, please contact me at (403) 539-2465 or by e-mail to john.martin@aeso.ca.

Yours truly,

[original signed by]

John Martin
Director, Tariff Applications

cc: Heidi Kirrmaier, Vice-President, Regulatory, AESO

Changes to AESO Procurement of Interruptible Load Remedial Action Scheme (ILRAS) Service

Discussion Paper
October 18, 2007

1. INTRODUCTION

The AESO is developing a proposal for changes to its procurement of Interruptible Load Remedial Action Scheme (ILRAS) service to replace the current arrangement wherein FortisAlberta is the sole provider of the service in Alberta. The AESO is seeking feedback respecting the recommendations in this discussion paper.

2. SUMMARY

This section summarizes the AESO's recommendations. Further discussion supporting the recommendations as well as the alternatives considered is provided in the following sections.

- In the AESO's assessment, ILRAS is a necessary component of restoring and maintaining inter-tie capacity and provides significant value to load customers, and therefore is essential to a fair, efficient, and openly competitive market. Therefore, the AESO is of the view that ILRAS should be used to facilitate imports over the inter-tie both in anticipation of potential supply shortfall conditions and to support in-market imports.

- The AESO has concluded there is currently no ready market from which to procure ILRAS service, nor is there sufficient interest to develop such a market through a competitive process. Therefore, the AESO proposes making ILRAS a mandatory service, in conjunction with appropriate compensation, which should be specified in the AESO Tariff for System Access Service.

- The AESO recommends that the larger DFOs should be obligated to provide ILRAS service. At the same time, other loads directly served from the transmission system should not be precluded from providing the service if they so choose and if they can satisfy the real-time telemetry and automatic tripping requirements.

- The AESO proposes that the cost of comparable service be used as the price for ILRAS service provided by the DFOs. Accordingly, providers of regulated ILRAS service should be compensated through a monthly ILRAS credit of $420.00/MW of ILRAS load available to be armed. The total annual cost of ILRAS to be recovered in the AESO's tariff would therefore be about $1.2 million. Notwithstanding, if additional voluntary service providers come forward, the AESO would reconsider a competitive procurement process for ILRAS service.

3. BACKGROUND

The AESO uses ILRAS to enhance the reliability of the AIES as well as to facilitate access to additional supply capacity and energy for Alberta.

ILRAS is an automated scheme that sheds load whenever a specific contingency occurs — that is, when imports into Alberta are large, and the Alberta-BC inter-tie trips off as the result of a fault on the inter-provincial interconnection. The scheme sends a signal to designated circuit breakers to open immediately after the interconnection trips; it does not wait to detect degradation in voltage or frequency before it sheds load and therefore minimizes the system disturbance that would occur if the interconnection were to trip during a period of high import.

With an appropriate level of ILRAS (in conjunction with the 59.5 Hz Load Shed Service (LSS)), the Alberta-BC inter-tie import transfer capability can be as high as 750 MW. Without ILRAS and LSS, the AESO would lower the import transfer capability by approximately 200 MW, to no more than 550 MW when Alberta Internal Load (AIL) is highest. Currently, up to 240 MW of ILRAS is needed to increase the import capability of the Alberta-BC inter-tie.

ILRAS service has been in place since 1998, when it was originally implemented by TransAlta. After industry restructuring and the unbundling of distribution, transmission, and the system operator functions, a contract between FortisAlberta and the AESO was executed to effect the continuation of the scheme more or less in its historical form. The arrangement has the effect of arming some of FortisAlberta's distribution loads under high import conditions, to be shed in the event the Alberta-BC inter-tie trips. The AESO system controller may begin to dispatch the arming of ILRAS loads when import levels are as low as 350 MW (depending on AIL levels and LSS availability), arming additional ILRAS loads as import levels increase. The system controller will then curtail ILRAS load through real-time telemetry in the event of an inter-tie trip. FortisAlberta receives $0.5 million to $0.8 million per year in compensation for providing the service, based on the quantity and duration of arming of ILRAS loads. This entire amount is returned to FortisAlberta's distribution customers through a deferral mechanism, but it remains the case that only certain FortisAlberta's customers are at risk of interruption for this particular service, while it is of benefit to all load customers on the Alberta Integrated Electric System (AIES).

This concern was raised in the AESO's 2004 tariff proceeding, resulting in Decision 2005-05 in which the EUB stated (page 24):

> The Board also notes that the renewal of ILRAS service with Fortis does not address the concern that a subset of Fortis's customers may be taking risk associated with possible outages, notwithstanding that these risks do not appear to be substantial. Accordingly, while the Board has no specific objections at this time to the continuation of ILRAS service arrangements with Fortis, the Board considers that the AESO should continue discussions with other potential suppliers at this time.

In 2004, the AESO engaged in discussions with FortisAlberta around formalizing a long term agreement for the provision of ILRAS service, instead of attempting to contract with new suppliers. The discussions with FortisAlberta did not conclude with a long term agreement being executed or the pricing structure changing. FortisAlberta advised the AESO that they would continue providing ILRAS under the existing agreement until such time as there was some material change in the service or a further review was completed.

On December 5, 2006, FortisAlberta sent the AESO a notice to terminate the ILRAS Agreement, effective January 4, 2007, citing that some of their customers were concerned about participating in the provision of this service.

As such, the AESO commenced an Ancillary Service Procurement Process for ILRAS by issuing an invitation for Expressions of Interest (EOIs) on December 7, 2006. This is discussed further in the section below.

In the interim, the AESO and FortisAlberta have reached an agreement that permits the AESO to utilize ILRAS in anticipation of potential supply shortfall conditions only, until February 2008. This change has been incorporated into the AESO's Operating Policies and Procedures (OPP)

312 respecting Import Load Remedial Action Scheme (ILRAS) and Load Shed Service (LSS), in a revision issued March 15, 2007.

4. NEED FOR ILRAS

The *Electric Utilities Act*, S.A. 2003, c. E-5.1, (EUA) in section 16 states that the AESO "must exercise its powers and carry out its duties, responsibilities and functions in a timely manner that is fair and responsible to provide for the safe, reliable and economic operation of the interconnected electric system and to promote a fair, efficient and openly competitive market for electricity."

The AESO's mandate is consistent with EUA section 6 expectations that market participants "are to conduct themselves in a manner that supports the fair, efficient and openly competitive operation of the market." The importance of a fair, efficient, and openly competitive market has been further emphasized through the work and conclusions reached by the Section 6 Committee throughout 2007. In particular, in its Phase II Report dated June 27, 2007, the Section 6 Committee concluded such a market requires equality of opportunity, unimpeded transactions between willing counterparties, and unimpeded opportunity to compete.

The *Transmission Regulation*, AR 86/2007, in section 16 further requires the AESO to restore and maintain the Alberta-BC inter-tie to, or near to, its original path rating for exports and imports.

As noted in *Alberta's Electricity Policy Framework*, dated June 6, 2005 (page 32), "Transmission interconnections with neighbouring jurisdictions are essential to a well-functioning power market as they support reliability, price stability, generation development and continued economic growth in Alberta. Albertans benefit from these interconnections by having the ability to import or export power as needed."

ILRAS is also essential for managing the AIES under system emergency conditions, including in anticipation of potential supply shortfall. In such circumstances, ILRAS allows the AESO to increase import capability while maintaining system stability. If the inter-tie were operated at high import levels during emergency conditions without ILRAS, the AIES would be put at increased risk. If the inter-tie were to trip during those conditions, the under-frequency load shed blocks would be tripped in order to protect the system from an event that they are not designed to protect against. This could lead to cascading outages affecting both generation and load.

ILRAS therefore contributes to the operation of a fair, efficient, and openly competitive market and to avoiding large-scale outages under system emergency conditions.

5. HISTORICAL ILRAS DATA

The AESO provides the following historical data with respect to ILRAS use and impacts.

Hours Armed and Curtailed

The following table summarizes the duration and level at which ILRAS load has been armed, and the duration and level of ILRAS load that has been curtailed, since ILRAS was first implemented.

Year	ILRAS Load Armed		ILRAS Load Curtailed	
	Hours	Average MW	Hours	Average MW
1998	NA	NA	-	-
1999	NA	NA	<1	120
2000	NA	NA	-	-
2001	NA	NA	-	-
2002	252 (Note 1)	107 (Note 1)	-	-
2003	209 (Note 1)	112 (Note 1)	-	-
2004	316	110	-	-
2005	532	114	<1	220
2006	403	116	-	-
2007 to Jul 31	2 (Note 2)	180	-	-

Notes: NA Data not available
(1) Estimated data
(2) ILRAS was armed only under system emergency conditions

The above table represents historical data. The AESO provides no assurance as to the hours and levels of ILRAS load arming or curtailment in the future.

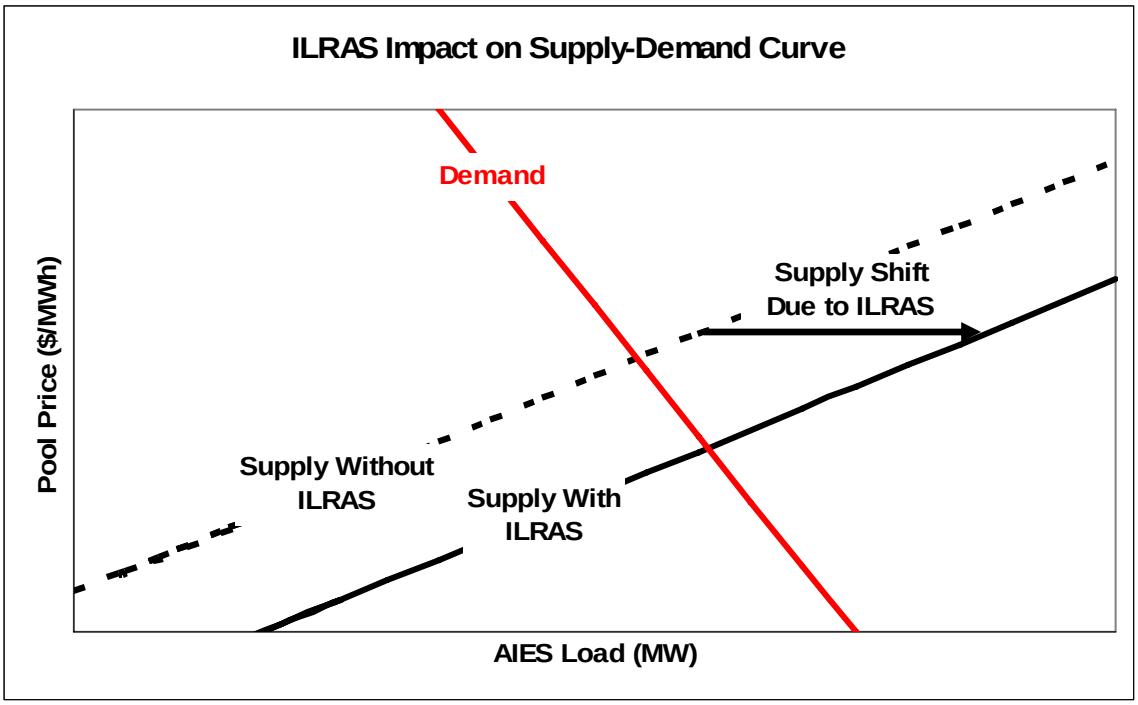
Effect of ILRAS on Import Capability and Estimated Impact on Pool Price

ILRAS (excluding the impact of the 59.5 Hz LSS) allows import transfer capability to be about 150 MW higher than it would be without ILRAS. In hours when actual imports utilize the additional available capacity, the cost of supplying that capacity by dispatching additional more-expensive generators in Alberta can be estimated. At the same time, the impact of price-responsive load dropping off the system as pool price increases must be taken into account.

The estimated impact of ILRAS on the wholesale market can be calculated in the following manner, where the specific numbers shown are average values for 2006:

- Number of hours ILRAS was armed: 400 hours
- Number of ILRAS-armed hours when imports increased: 270 hours
- Average increase in imports during those hours: 90 MW
- Average AIES load (excluding behind-the-fence load) during those hours: 6,800 MW
- Average pool price increase if imports were replaced by Alberta generation: $46/MWh
- Approximate impact of ILRAS on market: 270 hours × 6,800 MW × $46/MWh = $84 million

Conceptually, the effect is illustrated in the following chart:



Based on estimation of the impact of ILRAS in each hour in 2005 and 2006 when ILRAS was armed, the approximate impact of increased imports attributable to ILRAS is about $90 million per year. This reflects slightly more than 1% of the over $7 billion in annual energy transactions in the wholesale electricity market in Alberta.

This estimate is based on the specific use of ILRAS in the past two years, and also reflects all other AESO Rules, OPPs, and operating and market protocols that have been in effect during that period. If any of these change in the future (for example, dispatchable, priced imports), the impact on the market could change as well. This is noted simply to emphasize that the calculation above is a crude estimate and does not represent a definitive value.

The AESO also notes that over the two-year period discussed above, OPP 312 allowed FortisAlberta to withdraw ILRAS service under specific conditions of excessive wind speeds or lightning activity near the Alberta-BC inter-tie or of increased risk to equipment damage, personnel, or public safety. Such service withdrawal provisions reduce the Alberta-BC import capacity when utilized, and are reflected in the data provided above. Service withdrawal is not permitted when ILRAS is armed due to system emergency conditions (i.e., capacity shortages or frequency excursions). The AESO expects that the existing service withdrawal provisions will continue to remain available through OPP 312.

6. COMPETITIVE PROCUREMENT VS. MANDATORY (REGULATED) SERVICE

Competitive Process

As noted above, the AESO issued an invitation for Expressions of Interest (EOIs) in early December 2006 for ILRAS service. Based on this process, the AESO has determined that the service is not contestable and can not be competitively procured.

The following summarizes the responses and the AESO's interpretation of their effects:

- Distribution Companies (DFOs) advised the AESO they will not respond as they could not reasonably do so on behalf of their end-use customers.

- Based on the small number of responses, the coverage ratio of an RFP would be very low (likely less than one).

- Some of the respondents would likely be price sensitive industrial loads which would already reduce load in many of the hours in which ILRAS service is needed.

- If the AESO contracts for a portion of its ILRAS requirements with industrial loads by way of the RFP, the balance of ILRAS requirements would have to be acquired from the DFOs as a regulated service. This would lead to the same service having both regulated and non-regulated providers.

Based on the responses, the best case scenario — if the AESO were able to contract for every MW that responded with an Expression of Interest — would result in a coverage ratio of 1:1, or 240 MW. A coverage ratio of 1:1 is not an acceptable basis for a competitive service.

Given the number and type of responses received, the AESO also concluded there is a strong chance that a Request for Proposal (RFP) will not result in the ability to contract for the full 240 MW of ILRAS requirements. ILRAS is not conducive to being provided by "price sensitive" or "non-firm/interruptible" industrial loads. ILRAS intuitively should be provided by firm, price insensitive loads, as any others would naturally already have shed load under the conditions when ILRAS is needed.

Regulated Service

Historically the AESO has treated Brazeau Fast Ramp, 59.5 Hz Load Shed Service (LSS), and ILRAS as ancillary services, which are generally procured through bilateral contracts. These services are similar to each other in some respects. They constitute "controlled" services which are intended to avoid wide-scale uncontrolled interruptions. In addition, 50% of the load on the AIES is on Under Frequency Load Shed (UFLS) service, which is a regulated service provided for in the AESO's tariff and is a mandatory requirement from the Western Electricity Coordinating Council (WECC).

It could be argued that only mandatory services like UFLS should be regulated. However, as noted above, the ILRAS invitation for EOIs was considered by the AESO not to have been successful. ILRAS is also unlike Brazeau Fast Ramp and LSS because it is in fact currently being provided by a regulated entity. To date, ILRAS has been a logical fit with a distribution company and the EOI results suggest this may still be the case.

It is also the AESO's understanding that the telemetry and protection equipment required to provide ILRAS service already exists as part of the regulated infrastructure of utilities throughout Alberta, not just of FortisAlberta. Little, if any, additional infrastructure would be required for other DFOs to provide the service, as existing communications and automatic tripping infrastructure could be utilized.

Recommendation #1:

The AESO is of the view there is no ready market from which to procure ILRAS service, nor is there sufficient interest to develop such a market through a competitive process. Therefore, the AESO proposes making ILRAS a mandatory service, in conjunction with appropriate compensation, which should be specified in the AESO Tariff for System Access Service.

7. ALTERNATIVES

Given that ILRAS is required and that it cannot reasonably be procured through a competitive process, there are three key questions to be addressed. These are discussed below.

Should ILRAS be used to support both system reliability and increased in-market imports, or only system reliability?

ILRAS can be armed under both system emergency and normal operating conditions.

- If ILRAS is available under system emergency conditions (i.e., in anticipation of capacity shortages or frequency excursions), ILRAS will be armed by the system controller to increase the import capability of the Alberta-BC inter-tie, to reduce the AIES reserve requirement, or both.

- If ILRAS is available under normal operating conditions, ILRAS may be armed by the system controller to increase the import capability of the Alberta-BC inter-tie which may be used by importers for market opportunities.

In order to ensure that Alberta complies with WECC requirements for system reliability, the AESO sets out operating limits for imports on the Alberta-BC inter-tie in AESO Operating Policies and Procedures (OPP) 312. The import limits are based on Alberta load levels, the availability of the 59.5 Hz Load Shed Service, and ILRAS. Without ILRAS, the operating limit for imports on the inter-tie during normal system operating conditions will be reduced by approximately 150 MW in those hours when ILRAS would generally be armed. If the inter-tie were operated at high import levels without ILRAS, the AIES would be put at increased risk. If the inter-tie were to trip during such circumstances, a large quantum of under-frequency load shed blocks would need to be tripped in order to protect the system and arrest frequency decay. This could lead to cascading outages affecting both generation and load.

During emergency conditions, the AESO draws on the additional import capability made available by ILRAS in order to maintain supply to system load and to preserve operating reserve levels. Emergency conditions are defined as instances when the energy market merit order has been exhausted and the AESO invokes its Supply Shortfall procedures under OPP 801. Supply shortfall events can occur quickly and unpredictably, requiring quick action to enable acquisition of emergency supply. The Alberta-BC inter-tie generally provides quicker access to additional supply compared to domestic generation, which may have lengthy start-up requirements and slower ramping capabilities.

During normal operating conditions, the additional import capability made available by ILRAS is available to importers for additional access to the Alberta market. Importers may schedule flows over the Alberta-BC inter-tie up to the higher import transfer level made available through the use of ILRAS.

ILRAS has historically been employed both under emergency conditions to support system reliability and under normal operating conditions to increase in-market imports. In order to extend the service from FortisAlberta past January 2007, the ILRAS contract was amended (as was AESO OPP 312) to ensure ILRAS was only utilized under emergency conditions.

As discussed in Section 4 above, the AESO is mandated to restore tie-line transfer capability and to operate a fair, efficient, and openly competitive market, and therefore maintains that ILRAS is an important tool required to fulfill these obligations.

Recommendation #2:

The AESO is of the view that ILRAS should be used to facilitate imports over the inter-tie both in anticipation of potential supply shortfall conditions and to support in-market imports. Increasing import capacity and enabling in-market energy transactions contribute to the objective of an openly competitive market. The AESO thus considers ILRAS to be a necessary service required to operate the system reliably while providing a fair, efficient, and openly competitive market.

Which customers should be required to provide the service?

ILRAS service could potentially be provided by any load customer, either directly or indirectly through a distribution company, providing the necessary communication and control equipment is in place to effect the required automatic tripping.

ILRAS could therefore be made mandatory on a *pro rata* basis for all loads connecting to the AIES without compensation. Service to any load in Alberta may already be interrupted in the event of a system emergency (in accordance with Article 17.1 of the AESO tariff's terms and conditions of service), and no load is guaranteed uninterrupted service. Requiring that interconnected load include the necessary real-time telemetry and control equipment to permit ILRAS arming and automatic tripping could simply be characterized as an extension of the existing interconnection provisions whereby all load is subject to interruption. This mechanism would ensure sufficient load is available under ILRAS service to support both system reliability and increased in-market imports. However, this approach would require many loads to put infrastructure in place that they currently don't have, is not particularly applicable to price sensitive or interruptible loads that may not be available for arming when required, and may be impractical for small loads where a *pro rata* share of ILRAS requirements would be too small to monitor.

Under the current arrangement with FortisAlberta, 240 MW of load must be available to be armed for ILRAS on the request of the AESO, but it is up to FortisAlberta to select which feeders and loads contribute to the full contracted amount. This arrangement could be extended to just other distribution companies rather than all load customers. This would substantially reduce the probability that any individual DFO loads would experience an ILRAS-related interruption.

As discussed above:

- ideally ancillary services are acquired through a competitive procurement process or under mutually agreeable bilateral contracts;
- ILRAS service is not sufficiently competitive to be procured in this fashion;
- the AESO considers ILRAS to be a necessary service to operate the system reliably while providing a fair, efficient, and openly competitive market; and

- ILRAS should therefore be made mandatory, with compensation and associated terms specified in the tariff.

Recommendation #3:

To best address all of these factors, the AESO is of the view the larger DFOs should be obligated to provide ILRAS service, under terms similar to the existing FortisAlberta arrangement. At the same time, other loads directly served from the transmission system should not be precluded from providing the service if they so choose and if they can satisfy the real-time telemetry and automatic tripping requirements. This accomplishes both the fulfillment of the AESO's need for ILRAS and allows for the possibility of the voluntary provision of the service to accordingly reduce the mandatory burden.

More specifically, the AESO recommends ATCO Electric, ENMAX, EPCOR, and FortisAlberta DFOs each provide a portion of the total 240 MW according to their total aggregate contracted DTS capacity across all DTS points of delivery. This translates to the following amounts, based on contract capacities at the beginning of 2007, to be provided by each DFO.

Distribution Utility	Aggregate DTS Capacity (Note)	ILRAS Available to be Armed
ATCO Electric	1,649.4 MW	51 MW
ENMAX	1,593.9 MW	49 MW
EPCOR	1,087.9 MW	33 MW
FortisAlberta	3,480.5 MW	107 MW
Total	7,811.7 MW	240 MW

Note: As provided in Schedule BR.AESO-003 (a)-A3 Rev 2 (dated February 27, 2007) in the AESO's 2007 General Tariff Application proceeding

The DFOs could allocate these amounts among their individual points of delivery as they see fit.

The AESO does not believe it is practical to obligate the smaller DFOs to provide ILRAS for the following reasons:

- It is less practical for smaller DFOs to provide small amounts of ILRAS capacity. For example, the next smaller DFO is the City of Lethbridge, with 121.8 MW of DTS Capacity aggregated across five substations. If Lethbridge were added to the above table, it would be allocated a *pro rata* share of only 4 MW of ILRAS capacity. This amount is smaller than the amount of load connected to many distribution feeders, and it may result in more customers being armed for ILRAS in excess of the required capacity. This could result in a much larger share of a small DFO's customers being armed and exposed to an ILRAS interruption than for a larger DFO.

- The telemetry and automatic tripping requirements for ILRAS implementation, if not already existing, may cost on the order of $250,000 due to real-time response requirements. Incurring that amount of cost for only 4 MW of ILRAS capacity does not seem like an efficient approach.

If loads other than the four largest DFOs provide ILRAS service, the ILRAS capacity allocated among the four DFOs would be reduced by the amount provided by the additional loads. For

example, if an industrial customer contracts to provide 30 MW of ILRAS service, then the total allocated to the four DFOs would be reduced to 210 MW.

What is the appropriate compensation?

If there is to be any chance of success in attracting voluntary ILRAS service providers, the compensation must exceed the direct costs of the necessary infrastructure and must compensate adequately for the risk of interruption. The total cost to the AESO (recovered from all system access users in its tariff) should also reflect at least some of the benefit to the system in terms of added reliability and increased imports into the energy market. The AESO has examined these costs and provides the following comments.

Cost of Telemetry and Automatic Tripping Equipment
The equipment required to implement ILRAS for a DFO is estimated to cost on the order of $700,000 including labour (based on $200,000 for telemetry and $50,000 per site at 10 sites for automatic tripping). Assuming each DFO would require similar equipment to implement ILRAS service provision, the total cost of all equipment required would be on the order of $2.8 million. Assuming a typical life of 20 years for such equipment, annual cost would be about $350,000 or about $1,500 per MW available to be armed.

Equipment already in place allows the TFO to provide arming and tripping signals to many load sites in the province. The incremental cost of providing ILRAS arming and tripping signals for DFOs other than FortisAlberta are expected to be minimal. However, providing such signals to a specific site where an industrial customer was interested in providing ILRAS service could require the installation of additional equipment. Therefore the ILRAS compensation would need to exceed the cost of that equipment to be attractive to the industrial customer.

Compensation for Interruptions
As shown by the historical ILRAS data provided earlier in this paper, actual interruptions arising from ILRAS are short and infrequent. A conservative estimate would be 1 hour of interruption of all ILRAS armed load per year. It is difficult to assess the cost to a customer of such an interruption, but it would be expected to be greater than $1,000/MWh or else the customer would already have shed load in response to pool price increases. For a one-hour interruption once per year, minimum compensation would therefore be $1,000 per MW available to be armed.

The AESO notes that it proposes all ILRAS compensation approaches, including compensation for interruptions, be structured as $/MW capacity payments with no “activation” or actual curtailment component. This simplifies the ILRAS compensation structure, and reflects the value ILRAS provides even though actual ILRAS curtailment is rare. At the same time, the AESO provides no assurance as to the number or duration of arming directions or of any future curtailments.

Cost of Comparable Service
ILRAS is an automated scheme that sheds load whenever a specific contingency occurs. This is similar in concept to other ancillary services procured by the AESO. The AESO has reviewed costs for other ancillary services which may be comparable to ILRAS service, and has estimated the cost of providing ILRAS service if it was priced similarly to the comparable ancillary services.

The AESO considers that the following ancillary services are comparable in some respects to ILRAS service, and have characteristics that may be useful in establishing comparable compensation for ILRAS.

Service	Cost Basis	Provider	Trigger
UFLS Credit	Regulated Cost	Load	Frequency
59.5 Hz Load Shed Service	Competitive	Load	Frequency
Brazeau Fast Ramp	Single Provider	Generation	1201L Contingency
Supplemental Reserve	Competitive	Generation and Load	System Directive

If ILRAS service was priced according to the cost of the comparable services, the following annual compensation amounts would result.

- **Under-Frequency Load Shedding (UFLS) Credit** — At a 59.1 Hz relay trip setting, the credit is currently $65.00/MW of UFLS capacity per month. Applied to MW of ILRAS capacity, that credit would result in compensation of $65.00/MW × 12 months = $780/MW per year.

- **59.5 Hz Load Shed Service (LSS)** — Load Shed Service currently costs about $6.00/MWh of contracted service. For ILRAS requirements of 240 MW for 470 hours per year, the comparable LSS cost would result in compensation of $6.00/MWh × 240 MW × 470 hours = $676,800 per year. For 240 MW of ILRAS load, the compensation would be about $676,800 ÷ 240 MW = $2,800/MW per year.

- **Brazeau Fast Ramp Service** — Brazeau Fast Ramp service is currently contracted at a base level which makes the full 350 MW capacity of the Brazeau units available for fast ramp service, plus a charge for utilization of the service more than two times per contract term. If fast ramp service was utilized in the nine months in which ILRAS was armed in 2006, the total annual cost for Brazeau Fast Ramp service would be about $2,500,000 ÷ 350 MW = $7,100/MW per year.

- **Supplemental Reserves** — The cost of supplemental reserves currently average about $42.00/MWh for active on-peak supplemental reserves. ILRAS load is generally armed in on-peak periods when AIS load is highest. For average ILRAS arming of 115 MW for 470 hours per year, the comparable supplemental reserves cost would result in compensation of $42.00/MWh × 115 MW × 470 hours = $2,270,100 per year. For 240 MW of ILRAS load, the compensation would be about $2,270,100 ÷ 240 MW = $9,500/MW per year.

The AESO recognizes that differences exist between ILRAS service and those comparable services listed above. However, the comparable services may provide some indication of a price which would result from competitive procurement of ILRAS service, and which may therefore attract voluntary provision of such service from providers other than the DFOs. Pricing based on comparable services would result in ILRAS compensation as summarized in the following table.

Service	Compensation	Annual Cost
UFLS Credit:	$ 780/MW per year	$0.2 million
59.5 Hz LSS	$2,800/MW per year	$0.7 million
Brazeau Fast Ramp Service	$7,100/MW per year	$1.7 million
Supplemental Reserves	$9,500/MW per year	$2.3 million

ILRAS Compensation

As discussed in Section 5 above, ILRAS brings considerable value to the market for load customers. However, this value would disappear for many customers if it was converted into compensation for ILRAS service providers. It may therefore be more appropriate to base ILRAS compensation on the considerations discussed above, namely:

- Cost of Telemetry and Automatic Tripping Equipment $1,500/MW per year
- Compensation for Interruptions $1,000/MW per year
- Cost of Comparable Service $780/MW per year to $9,500/MW per year

The minimum compensation for ILRAS service should be the sum of the first two considerations — cost of equipment and compensation for interruptions — which total $2,500/MW per year. This minimum compensation is greater than that based on comparable Under-Frequency Load Shedding service and close to that based on 59.5 Hz Load Shed Service.

The remaining two comparable services, Brazeau Fast Ramp Service and supplemental reserves, are nearly three and four times higher, respectively, than the minimum compensation level.

Although there are differences between ILRAS service and those comparable services listed above, the 59.5 Hz Load Shed Service (LSS) may be most similar to ILRAS in that it is provided by load customers. LSS is provided on a competitive basis, with compensation that would be about $2,800/MW per year for 240 MW of ILRAS service. The AESO understands that LSS providers required little or no incremental telemetry and automatic tripping equipment in order to be able to offer LSS, and the price of LSS would likely not include such equipment costs. The AESO therefore suggests that compensation for ILRAS service could be based on the sum of equipment costs of $1,500/MW per year plus the cost of LSS of $2,800/MW per year, for a total comparable cost for ILRAS of $4,300/MW or $1.0 million per year.

A comparable cost based on equipment costs plus LSS should not include additional compensation for interruptions. The competitive procurement process for LSS should result in prices which appropriately compensate LSS providers for the risk of interruptions. That is, an LSS provider would not offer to provide LSS competitively if the price would not provide adequate compensation for interruptions that may occur. The average LSS costs discussed above should therefore already reflect average compensation for interruptions.

However, the AESO is concerned with directly linking the cost of one service (ILRAS) with the cost of a single, separate, and not fully comparable service (LSS). The AESO therefore suggests that ILRAS compensation be set at the average level of the four comparable services discussed above, namely, at $5,045/MW or $1.2 million per year. This compensation level is about twice the minimum level, is slightly higher than the equipment costs plus LSS approach, and should encourage additional voluntary service providers to participate in the supply of ILRAS service. If a significant number of additional voluntary service providers come forward, the AESO would reconsider a competitive procurement process for ILRAS service.

Recommendation #4:

Providers of regulated ILRAS service should be compensated through an annual ILRAS credit of $5,045/MW of ILRAS load available to be armed. The credit would be provided on a monthly basis, and would be $420/MW per month. The total annual cost of ILRAS to be recovered in the AESO's tariff would therefore be about $1.2 million.

The AESO notes that where the telemetry and automatic tripping equipment required for ILRAS service already exists, the cost of that equipment is already being recovered in TFO and DFO rate bases. If additional equipment is required for the provision of ILRAS service by DFOs other than FortisAlberta or voluntarily by industrial customers, the AESO expects that such costs would be funded or paid for by those DFOs or industrial customers providing the service. As detailed above, the compensation proposed for ILRAS service exceeds the average cost of telemetry and other equipment, and should enable appropriate business decisions by industrial customers. In the event significant new equipment is required and only a relatively small amount of ILRAS service would be provided, or if the voluntary provider considers the contribution to long-lived assets incompatible without long-term ILRAS contracts, the AESO assumes the economic signal would indicate provision of ILRAS service under such circumstances is not appropriate.

8. CONCLUSIONS

The AESO proposes that the requirement for the four largest DFOs to connect a proportion of their total load to ILRAS will ensure that there is sufficient load on ILRAS to enhance system security and minimize system disturbances in the event of an inter-tie trip during a period of high import for both system reliability and increased in-market imports. Industrial customers will have the opportunity to participate in the provision of ILRAS load at the regulated rate.

The recommended compensation reflects an estimate of the cost of comparable ancillary services, and amounts to $420/MW/month based on the MW each provider is directed to have available to be armed for ILRAS service. The AESO provides no assurance as to the number or duration of arming directions or of any future outages.

A draft rate sheet is attached. As with other components of the AESO tariff, the rate and ILRAS capacity to be provided by each ILRAS service provider will be reviewed and updated in the course of AESO rate applications, to reflecting changing costs and additional ILRAS service providers, if any.

ILRAS **Interruptible Load Remedial Action Scheme Credit** Page 1 of 1

Purpose: The Interruptible Load Remedial Action Scheme Credit compensates Demand Customers who are connected to load shedding devices and therefore face an increased risk of outage. ILRAS is used to support both system reliability and increased in-market imports over the Alberta-BC inter-tie. The AESO has the right to require each Demand Customer to maintain a portion of that Customer's aggregate load (across all PODs through which the customer takes System Access Service) to be connected to ILRAS load shedding devices.

Available to: ATCO Electric, ENMAX, EPCOR, FortisAlberta, and other customers served under the DTS Rate Schedule (collectively referred to as "ILRAS Service Providers") who are directed by the AESO to provide ILRAS service.

Rate: The **ILRAS Credit** is:

- **$420.00/MW/month**

ILRAS Capacity: The ILRAS Credit is applied to the capacity in MW ("ILRAS Capacity") required to be:

- connected to ILRAS load shedding devices satisfactory to the AESO, and
- available to be armed at any time for shedding by the AESO in accordance with AESO Operating Policies and Procedures (OPP) 312.

ILRAS Service Providers are required to provide the following ILRAS Capacity:

- ATCO Electric ..... 51 MW
- ENMAX Power ..... 49 MW
- EPCOR Distribution & Transmission ..... 33 MW
- FortisAlberta ..... 107 MW

The AESO may revise an ILRAS Service Provider's ILRAS Capacity from time to time. The ILRAS Service Provider must ensure the aggregate load connected to ILRAS load shedding devices across all PODs through which the ILRAS Service Provider takes System Access Service continuously meets current and revised ILRAS Capacity requirements.

Terms: (a) The Terms and Conditions form part of this Rate Schedule.

(b) The AESO provides no assurance as to the number or duration of arming directions or of any future outages.