



March 14, 2008

*Submitted electronically*

Alberta Utilities Commission  
Utilities Division  
Fifth Avenue Place  
4th Floor, 425 – 1st Street NW  
Calgary, Alberta  
T2P 3L8

Attention: Jamie Cameron, Application Officer

Dear Jamie:

Re: **Responses to Information Requests in Husky Oil Complaint Application on AESO Interim Fort Nelson Rider H (1554646)**

Attached are the AESO's responses to information requests received pursuant to the above-noted application.

If you have any questions on these information responses, please contact me at (403) 539-2465 or by e-mail to [john.martin@aeso.ca](mailto:john.martin@aeso.ca).

Yours truly,

*[original signed by]*

John Martin  
Director, Tariff Applications

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

**Reference:** Rider H Application, Page [6]

**Preamble:** The AESO indicates that there is likely to be a reduction in reliability for 30% of the time.

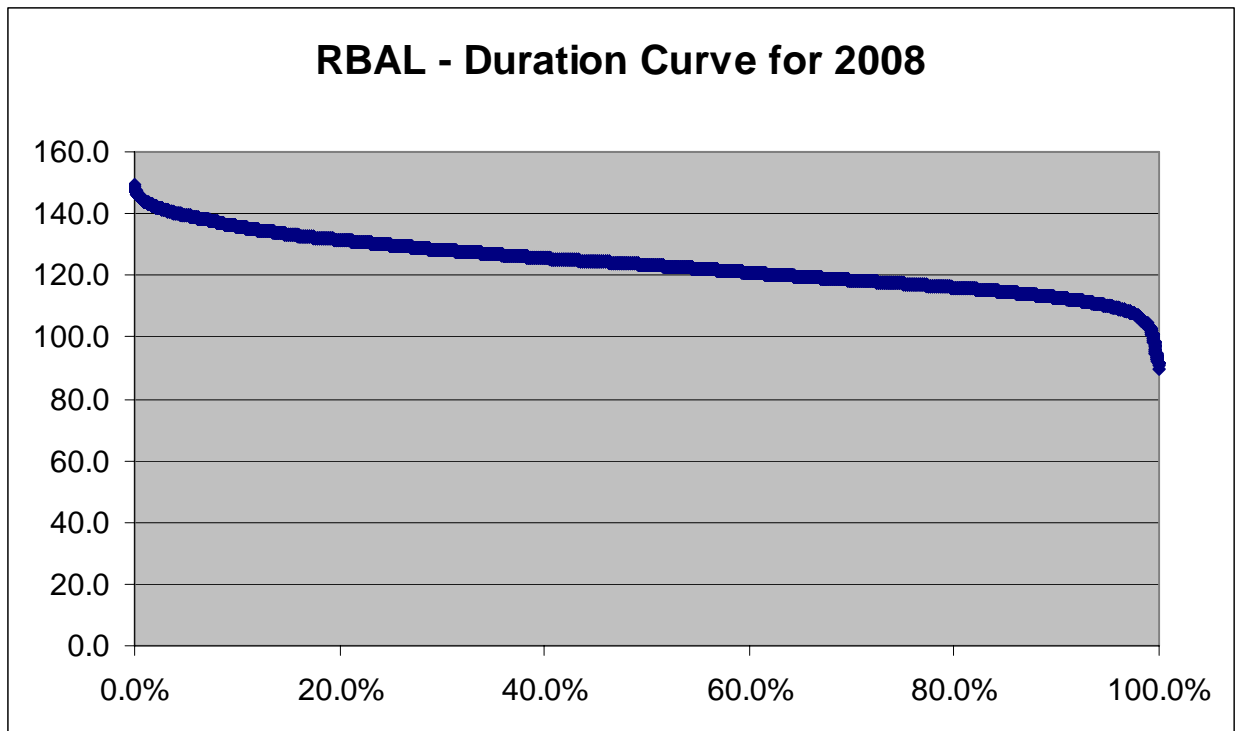
**Request:**

- (a) Please confirm that the 30% relates to all hours of the year, or more than 2400 hours.
- (b) What does the AESO consider the frequency/duration of forced or unplanned outages to customers in the Rainbow area to be given the new load in the area? Please explain.
- (c) Has the AESO developed a load shedding plan for the area? Please provide details.

**Response:**

- (a) The quoted percentage relates to all hours of the year, reflecting estimates of TMR dispatch requirements based on the Rainbow Area load forecast for 2008 and prepared prior to the December 19, 2007 filing of the Interim Fort Nelson Rider H Application.

Since that Application was filed, the TMR dispatch requirements for the Rainbow Area have been re-estimated to correct a small overstatement of the load increase, incorporate losses, and reduce rounding error. The AESO now expects that four generators will be dispatched for TMR service for about 22% of the time during 2008. This expectation is based on Rainbow Area load exceeding 130 MW for about 1,930 hours during the year as shown in the following forecast load duration curve for 2008 (where "RBAL" refers to Rainbow Area Load).



- (b) It is not practical to attempt to predict or forecast the frequency and duration of forced or unplanned outages on a transmission system.

However, the AESO has reviewed historical data for the past three years respecting the loss of multiple TMR generators in the Rainbow Area which could result in load curtailment. The historical average unit on-line availability of the Rainbow Area generators is 95.8%, and the Rainbow Area has experienced loss of multiple generators in four separate events since January 2005. During each of these events, the area voltage did not depress to extreme values and no firm load was lost. The events are summarized in the following table.

Year	Number of Events	Firm Load Loss	Average Duration (hours)
2005	1	None	0.03
2006	1	None	0.10
2007	2	None	3.5

The load curtailment procedures described in information response HARVEST.AESO-002 (a-d) and the increased TMR dispatch requirements effectively result in the Rainbow Area reliability being unaffected by the addition of the BC Hydro load. In this respect, recent event history may reasonably represent the frequency/duration of multiple forced or unplanned outages in the Rainbow area.

- (c) As discussed in information response HARVEST.AESO-002 (a-d), the AESO has developed and implemented revised load curtailment procedures as detailed in Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation, effective March 1, 2008. ATCO Electric and the AESO will coordinate and decide when and what amount of load curtailment is required in accordance with OPP 501. The load

curtailment procedure will be further updated in the future to reflect the operation of a Rainbow Area Under Voltage Load Shed (UVLS) scheme designed to reduce the impact of multiple transmission contingencies. The UVLS scheme is currently being implemented by ATCO Electric and BC Hydro by May 2008.



**Title:** Remedial action

**Preamble:** The Commission wishes to explore what options are available to minimize any reduction in reliability to Husky and other Rainbow area customers.

**Request:**

- (a) Is it possible to activate Rainbow unit 1 and/or Rainbow unit 3 to provide TMR service? Please explain.
- (b) Is it possible to install a portable generator in the Rainbow area to provide backup service? Please explain.
- (c) What are the current plans to construct transmission reinforcements into the area and what is their time horizon?

**Response:**

- (a) ATCO Power owns Rainbow Units 1 and 3 and has indicated to the AESO that Rainbow Units 1 and 3 are unavailable for TMR service and are being considered for decommissioning.
- (b) Yes, it may be possible to utilize a portable generator for backup TMR dispatch. Evaluating the availability of a suitable generator, designing an interconnection facility, and procuring and interconnecting the generator would require over a year, and therefore could not respond to the immediate need of accommodating the additional BC Hydro load.
- (c) Listed below are the major transmission developments and their respective proposed in-service dates that would directly support the Rainbow Area load. These transmission elements were approved by the Alberta Energy and Utilities Board in Order U2006-205 as part of the Northwest Alberta Transmission Development Need Application.

Transmission Development	Proposed In-Service Date
Brintnell 876S to Wesley Creek 834S S/C 240 kV line	April 2010
Wesley Creek 834S to Meikle 905S D/C 144 kV line	April 2010
Arcenciel 930S to Ring Creek 853S 144 kV line	April 2011
Sulphur Point 828S to High Level 786S 144 kV line	April 2011
Arcenciel substation, addition of one 30 MVAR capacitor bank, one +/- 30 MVAR SVC and one +50/-30 MVAR synchronous condenser	Cap. Bank – April 2011 SVC – Sept 2011 Sync. Cond. – Sept 2011
High Level 786S, addition of one +/- 30 MVAR SVC	June 2010



**Title:** Rider H Application

**Preamble:** In the Application the AESO indicates that the costs of providing the additional service to BC Hydro will be the subject of a future application.

**Request:**

Please provide an update as to when the AESO expects to file the cost application.

**Response:**

In its Interim Fort Nelson Rider H Application, the AESO stated (page 4, lines 33-37):

*In early 2008, the AESO and BC Hydro will cooperate to consider and study all reasonable alternatives to serve the incremental BC Hydro load. The AESO will then apply for a final rate determination on an effective and manageable alternative for service to BC Hydro in the Fort Nelson area in the latter half of 2008, allowing for its approval before the interim rider expires.*

In February 2008 the AESO began working with BC Hydro and the BC Transmission Corporation to complete a planning assessment of options for serving load in the Fort Nelson and Rainbow Lake area. The planning assessment is expected to be complete in or about September 2008, and will identify interim solutions that may be implemented before the currently-approved Northwest Alberta Transmission Development is complete as well as other long-term solutions that may be needed to meet future load growth.

The AESO expects to file the final rate application, which will include the costs of serving incremental BC Hydro load, in the fall of 2008 after the planning assessment is complete. The AESO considers that the nature and structure of the final rate proposal should reflect and align with the recommended options for serving load in the area.

**Title:** Grid Operations

**Reference:** AESO December 19, 2007 application for Rider H, section 3.2, page 5 of 8

**Preamble:** Harvest wishes to understand the need for load curtailment in the Rainbow Lake area.

**Request:**

- (a) Please provide all studies and related documents that support the requirement for load curtailment in the Rainbow Lake area.
- (b) Please provide a description of historical practices of load curtailment in the Rainbow lake area, including a table showing the generation capacity, peak load levels and number of curtailments by year. Please reconcile historical practices with the current AESO position on the need for load curtailment.
- (c) Please describe how the AESO will determine when load curtailment is required, including the source and quality of the load and generation data the AESO will rely on, and the communication protocols that will be utilized.

**Response:**

- (a) Please refer to Information Response HOL.AESO-001 (a).

The AESO conducts reliability assessments, in the form of load flow and stability studies, and expresses the results in Operating Policies and Procedures (OPPs). The AESO provides interested parties with operational load flow cases in order that they are able to conduct their own analysis. The AESO consistently treats the engineering reports resulting from its studies as confidential, and therefore respectfully declines to produce them. The reports may contain customer-specific confidential information and may illustrate system vulnerabilities that should not be in the public domain. The AESO rule-making process provides opportunity for consultation on specific issues within the OPPs.

- (b) AESO practices for load curtailment have not changed since at least 1999, and no history is available prior to 1999.

The historical practice from 1999 to March 2008 was as follows:

- (a) Dispatch available contracted generation in accordance with the requirement expressed as area load level.
- (b) If contracted generation is insufficient to meet the requirement, either shed load or operate the area at risk for load loss following a contingency.
- (c) Following contingencies, manual load shed and restoration may be required.
- (d) Non-contracted generation, if available, may be directed on to restore load that has been shed or if load is anticipated to be shed.

(e) Resume normal operations as soon as facilities are available.

Generation capacity in the Rainbow Area has not changed for more than 5 years. Rainbow Area generators and their capacities are summarized in the following table.

<b>Generator</b>	<b>Maximum Continuous Rating (MCR) (MW)</b>
Rainbow 1 (RB1)	26
Rainbow 2 (RB2)	40
Rainbow 3 (RB3)	21
Rainbow Lake 1 (RL1)	47
Rainbow 5 (RB5)	47
Fort Nelson (FNG)	47

Note that Rainbow 1 and Rainbow 3 are normally out of service and are being considered for decommissioning.

Rainbow Area peak loads from 2004 to 2007 were as follows:

<b>Year</b>	<b>Approximate Peak Load (MW)</b>
2004	152
2005	138
2006	146
2007	154

There have been no load curtailments related to a lack of TMR generation in the Rainbow area since at least 2005. Please refer to information response Comm.AESO-001 (b) for additional information.

The AESO current position on the need for load curtailment in the Rainbow Area is consistent with historical practice as summarized above.

- (c) Load curtailment is considered when required levels of TMR dispatch are not met. Load and generation data are obtained from the AESO's real time systems and revenue metering data. The same communication protocols are used during curtailments as during normal system operations. For the Rainbow area, the system controller will direct curtailment volumes to the distribution facility owners in the area, namely, ATCO Electric and BC Hydro. The AESO's Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation describes the procedures followed for the Rainbow Area.

**Title:** Grid Operations

**Reference:** AESO December 19, 2007 application for Rider H, section 3.2, page 5 of 8, line 43:

During any period in which four generators are dispatched on-line when Rainbow Area load exceeds 130 MW, if a planned or unplanned outage of one of the four generators occurs no backup TMR generator will be available. Load services will then need to be curtailed either in accordance with a plan designed for a specific contingency or in preparation for the second contingency.

However, the AESO considers the risk of such an occurrence to be relatively small and generally comparable to the risk of interruptions in other areas of the province.

...

The AESO has advised other large customers in the Rainbow Area of the potential reliability impact of incremental TMR dispatch. Ultimately, the AESO considers that the impact on reliability would be comparable to that which would result from serving increased Alberta load in the Rainbow Area, and is therefore reasonable.

**Preamble:** Harvest wishes to understand the AESO operating protocols to curtail loads [in] the Rainbow Lake area when load exceeds 130 MW and one of the four Rainbow Lake TMR generators experiences a planned or unplanned outage.

**Request:**

(a) Please confirm that the AESO has notified BC Hydro that as a condition precedent for Harvest to be connected to IL359 BC Hydro must agree to the following conditions:

- Curtailments to the BCTC load are proposed to occur under the following defined conditions:
    - Rainbow area load exceeds 130 MW AND less than the minimum number of contracted TMR generators are available for service.
  - OR
  - Contracted Rainbow area TMR providers are not able to meet their minimum TMR MW requirement
  - OR
  - To enable any load tripped by UVLS in the Rainbow area to return to service.
- The AESO will communicate with BCTC operators through existing communication channels using existing communication protocols.

- BCTC will be given 20 minutes to curtail the load.

If not confirmed, please explain in detail.

- (b) Please confirm that BC Hydro has accepted the AESO's conditions as noted in (a) above. If not confirmed, please explain in detail.
- (c) Please provide an estimate of the number and forecast duration of curtailments of BC Hydro load anticipated in 2008 and 2009. Please provide supporting information for your forecast.
- (d) Please confirm with BC Hydro's acceptance of the conditions noted in (a) above that the reliability of service to Husky's Rainbow Lake processing plant and to other loads in the Rainbow Lake area will not be materially affected by the interconnection of Harvest's load to IL359. If not confirmed, please explain in detail.
- (e) Please explain the rationale for requiring the BC Hydro / Harvest load to be curtailed as opposed to requiring all Rainbow Lake area loads to be curtailed on a pro rata or alternating basis.
- (f) In circumstances where the AESO deems it necessary to curtail load in the Rainbow Lake area does it make a difference from an operational perspective if the Harvest Load is curtailed or any other load in the area? Please fully explain your response.

**Response:**

- (a) Confirmed. Load curtailment procedures were developed after the filing and approval of the Interim Fort Nelson Rider H application, as an approved tariff was required for the AESO and BC Hydro to agree to the requested contract capacity increase. The AESO concluded that the conditions listed in the question were appropriate based on the potential reliability impacts of accommodating the increased load in the short term. BC Hydro was advised of these conditions on January 23, 2008.
- (b) Confirmed. BC Hydro accepted the conditions on January 30, 2008. On February 28, 2007, the AESO provided notice of an expedited change to Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation to incorporate the load curtailment policies and procedures for the new BC Hydro load in the Rainbow Area, to be effective March 1, 2008.
- (c) It is not practical to attempt to predict or forecast the frequency and duration of forced or unplanned outages on a transmission system. Please refer to information Response Comm.AESO-001 (b) for additional information.
- (d) The curtailment of Harvest load prior to any other loads essentially restores the Rainbow Area system to the status that would have existed without the connection of the Harvest load, under the defined conditions based on AESO Operating Criteria. However, the AESO is aware that some questions have recently arisen relating to coordination of protection equipment in the area. These questions remain to be resolved to ensure that the AESO protection standards are met and reliability of service to loads in the area is not affected.

- (e) When planning the addition of load in a constrained area, the AESO will assess reliability issues such as voltage stability and thermal overloads that may occur as a result of the additional load. If there is no practical way to accommodate the additional load in the constrained area without implementing load curtailment procedures, the additional load may be required to curtail before other loads until appropriate transmission system infrastructure can be provided to alleviate the constraint. Alternatively, the additional load may decide not to be connected to the system until such infrastructure is in place. Existing load does not have similar options, such as delaying interconnection, available to it.
- (f) The answer is generally no, but the location of the load and the load type do affect post-contingency performance. Loads that are further from the voltage support provided by generators will usually experience lower post-contingency voltages. Motor load and other inductive loads also tend to experience lower post contingency voltages.

**Title:** Rainbow Lake Area Load Forecast

**Reference:** [http://www.canfor.com/\\_resources/news/2008/N080118\\_Canfor\\_Announces\\_Indefinite\\_Closure\\_PolarBoard\\_Tackama\\_Mills.pdf](http://www.canfor.com/_resources/news/2008/N080118_Canfor_Announces_Indefinite_Closure_PolarBoard_Tackama_Mills.pdf)

<http://finance.sympatico.msn.ca/investing/news/businessnews/article.aspx?cp-documentid=6333964>

**Preamble:** On January 18, 2008 Canfor announced two plant closures in the Ft. Nelson area. On February 25, 2008 the media reported that the Canfor Tackama plywood mill may not cease production.

**Request:**

- (a) Please provide the AESO's load forecast for the Ft. Nelson area from 2008 to 2012. Please provide and explain the source of all data used in developing the load forecast.
- (b) Please provide the AESO's load forecast for the Rainbow Lake area from 2008 to 2012. Please provide and explain the source of all data used in developing the load forecast.
- (c) Please provide the timing and magnitude of all Husky load increase requests in the Rainbow Lake area the AESO is aware of since January 1, 2006.
- (d) Please confirm that if the announced Canfor plant closures in Ft. Nelson actually cease production, which are estimated to use 10 to 12 MW of electric energy, the total Rainbow Lake area load will decrease and the need for TMR services and load curtailment will be reduced, potentially to the point that Rider H would no longer be required. Please explain fully.
- (e) Please confirm that if the load reductions from the Canfor plant closures are about 10 to 12 MW, and the 10 to 12 MW Harvest load is added, there would be no material net change in the current operating parameters, TMR requirements or reliability levels in the Rainbow Lake area. Please explain fully.

**Response:**

- (a) BC Hydro develops and provides the load forecast for the Fort Nelson area. The forecast prepared in 2006 and presented to the AESO is provided below. The AESO understands that this forecast did not include the 14 MW increase in contract capacity requested by BC Hydro in late 2006.

<b>Year</b>	<b>Fort Nelson Area Forecast (MW)</b>
Winter Peak 2007-2008	28.5
Winter Peak 2008-2009	29.3
Winter Peak 2009-2010	30.0
Winter Peak 2010-2011	30.8
Winter Peak 2011-2012	31.6

- (b) The Rainbow Area load forecast which includes the Fort Nelson area is as follows:

<b>Year</b>	<b>AESO 2007 Rainbow Area Forecast (MW)</b>
Winter Peak 2007-2008	125.1
Winter Peak 2008-2009	142.5
Winter Peak 2009-2010	142.7
Winter Peak 2010-2011	143.6
Winter Peak 2011-2012	144.4

This forecast includes the BC Hydro load increases in 2007 and 2008.

- (c) Specific customer load requests and individual customer contract details are consistently treated as confidential by the AESO, and the AESO respectfully declines to produce such information. The total volume of contracted capacity increases (both DTS Demand Transmission Service and FDS Fort Nelson Demand Transmission Service) by customers in the Rainbow area are as follows:

<b>Year</b>	<b>Contracted Capacity Increases (MW)</b>
2003	None
2004	None
2005	1
2006	33
2007	None
2008	None

- (d) A reduction of load at Fort Nelson by the same amount and of a similar load pattern as the Harvest load addition would effectively reduce the impact of the Harvest load increase. The relative locations of the load reduction and addition may result in different impacts on area reliability, and could result in only partial reduction of the requirement for additional TMR dispatch and associated costs. Engineering studies are required to assess the impact.
- (e) Engineering studies are required to assess the net change in current operating parameters, TMR requirements, and reliability levels in the Rainbow Area. Load patterns, system topology, and system response may differ between the load reduction and addition, with resulting impacts on system operations.

**Title:** Rainbow Lake Area Transmission Reinforcements

**Reference:** EUB Order U2006-205

**Preamble:** Timing for transmission reinforcements for the Rainbow Lake Area

**Request:**

- (a) Please confirm that ATCO Electric plans to install the following transmission upgrades in the Rainbow Lake area by April 2011:
- New Rainbow Lake (Arcenciel) substation
  - Arcenciel Capacitor Addition
  - Arcenciel Synchronous Condenser (SC)
  - Arcenciel Static VAR Compensator (SVC)
  - New single-circuit 144-kV transmission line from Arcenciel to Ring Creek 853S

If not confirmed, please explain in detail.

- (b) Please describe the impact these transmission upgrades (and the other northwest area transmission upgrades approved in Need Assessment Approval No. U2006-205 that will be installed subsequent to the Rainbow Lake area upgrades) will have on the reliability of service to the Rainbow Lake area load customers and the need for TMR. Please explain in detail.
- (c) Please confirm that with these transmission upgrades there will no longer be a requirement to curtail Harvest's load. Please explain in detail.
- (d) Please confirm that with these transmission upgrades, and current load levels, there will no longer be a requirement for Rider H and incremental TMR in the Rainbow Lake area. Please explain in detail.

**Response:**

- (a) Please refer to Information Response Comm.AESO-002 (c).
- (b) Presently, the Rainbow Area load peaks at about 140 MW (excluding the Harvest load addition) and requires four TMR units supplying 130 MW to support this load.

Once the Northwest Alberta Transmission Development upgrades are completed in 2011, the Rainbow Area transmission system will be able to support approximately 145 MW of load without the need for dispatch of any TMR generation under normal conditions. Without a need for TMR generation, reliability would generally be considered higher than exists today. However, as provided in Information Response HARVEST.AESO-003 (b), area load is currently expected to peak near 145 MW by

2011, and if load exceeds 145 MW then dispatch of TMR generation would be expected to continue to be required. If TMR generation continues to be required in the area, reliability would be expected to be similar to the current reliability.

- (c) Confirmed, based on current load forecasts. Upon completion of the Northwest Alberta transmission upgrades, there should no longer be a requirement for dispatch of four TMR generators, and therefore no requirement to curtail Harvest load under the conditions discussed in Information Response in HARVESET.AESO-002 (a).
- (d) As discussed in part (b) above, after the transmission upgrades there will still be a requirement for dispatch of TMR generation whenever area load exceeds 145 MW.

As indicated in its Interim Fort Nelson Rider H Application, the AESO expects Rider H to be replaced by a final rate or rider as a result of a final rate determination on this matter later this year. The final rate or rider is expected to align with the recommended long-term options for serving load in the Rainbow Area.



**Reference:** Alberta Electric System Operator Interim Fort Nelson Rider H Application December 19, 2007 ("Application"), page 1 of 8, lines 31 – 36.

**Preamble:** The Alberta Electric System Operator ("AESO") indicates that it completed an assessment of operational constraints in the Rainbow Area in August, 2007 and that the AESO subsequently began discussions of alternatives with BC Hydro.

**Request:**

- (a) Provide a copy of each document that either describes the assessment that was completed in August 2007, reports the results and conclusions of the assessment, or that was completed as part of the assessment.
- (b) Provide a detailed explanation of what is meant by "...would require significant additional dispatch of transmission must run (TMR) generation in the Rainbow Area" including an explanation and quantification of what is meant by "significant additional dispatch of [Transmission Must Run ("TMR")] generation...."

**Response:**

- (a) In the AESO's Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation, Table 3 provides the TMR requirements for the Rainbow Area. The AESO's study in 2007 recommended that Table 3 be updated. The following table provides the original OPP Table 3 and the study's recommendations.

RBAL (MW)	Original OPP-501 Requirements for RB Area		Recommended Requirements for RB Area	
	Min. # of Generators Providing MW	Rainbow/Ft. Nelson Combined Generation (MW)	Min. # of Generators Providing MW	Rainbow/Ft. Nelson Combined Generation (MW)
Below 81	3	65	3	65
81 – 90	3	75	3	75
91 – 100	3	90	3	90
101 – 110	3	95	3	95
111 – 120	3	105	3	110
121 – 130	3	110	3	120
131 – 140	3	120	4	130
141 – 150			4	150
151 – 160			4	160
161 – 170			4	170

The table shows an additional 5 to 10 MW of TMR is required at Rainbow Area load (RBAL) levels between 111 and 130 MW and an additional TMR generator and an additional 10 to 50 MW of TMR is required at load levels of 131 MW or more.

- (b) At the time of the filing of the Interim Fort Nelson Rider H Application on December 19, 2007, and based on the load forecast for 2008, the AESO estimated that the additional 10 MW load would put the Rainbow Area load above 130 MW for about 30% of the hours in the year. Since filing the application, and as noted in Information Response Comm.AESO-001 (a), the AESO has re-estimated the TMR dispatch requirements for the Rainbow Area, and now expects Rainbow Area load will exceed 130 MW for about 22% of all hours in the year.

Rainbow Area load levels above 130 MW would require dispatch of an additional TMR generator as well as increased volumes of TMR dispatch for existing generators. This was estimated in the application to increase TMR costs for the Rainbow Area by about \$6.75 million per year, which the AESO considers significant.

**Reference:** Application, page 3 of 8, lines 18 – 19.

**Preamble:** The AESO provides estimates of the incremental costs to serve the additional 10 MW of load in British Columbia.

**Request:**

- (a) In estimating the incremental costs of serving the additional 10 MW of load in British Columbia, did the AESO include an estimate of the costs of indemnifying Husky Oil Operations Limited ("Husky") from any damages, losses, etc. resulting from the consequent reduction in reliability of transmission service in the Rainbow Area? If not, explain why not.
- (b) In estimating the incremental costs of serving the additional 10 MW of load in British Columbia, did the AESO include an estimate of the costs and damages that Husky could incur as a consequence of the reduction in reliability of transmission service in the Rainbow Area? If not, explain why not.

**Response:**

- (a-b) No. With the addition of the Harvest load and corresponding increased reliance on TMR service to supply loads in the area, the AESO considers that all customers continue to receive acceptable levels of reliability. In accordance with Article 13 of the AESO's approved terms and conditions of service, no customer is guaranteed uninterrupted system access service. The cost of system access service does not include the cost of potential losses or the cost of indemnifying customers from such losses due to outages of electricity for any reason.

Please also refer to information response HARVEST.AESO-002 which describes how the impact on reliability to existing loads in the area has been mitigated through load curtailment provisions in Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation, which have been revised since the filing of the Interim Fort Nelson Rider H Application.

**Reference:** Application, page 3 of 8, line 5

**Preamble:** The AESO indicates that a fourth TMR generator will be required when Rainbow Area load exceeds 130 MW and that OPP 501 will be updated if necessary to reflect the results of various studies.

**Request:**

- (a) Provide a copy of OPP 501 in effect as at the date of the Application.
- (b) Provide a copy of OPP 501 in effect as at the date of the response.
- (c) Does OPP 501, whether as currently in effect or as proposed, contemplate load shedding for the new British Columbia load? If so, provide a complete description and explanation of such requirements or arrangements. If not, explain why not.
- (d) Does the AESO intend to make any future Alberta or British Columbia load in the Rainbow Area subject to similar load shedding requirements or arrangements? If so, provide a complete description and explanation of such requirements or arrangements.

**Response:**

- (a) Please see Attachment HOL.AESO-003 (a).
- (b) Please see Attachment HOL.AESO-003 (b).
- (c) Yes, OPP 501 effective March 1, 2008 contains load shed provisions for the additional BC Hydro load. Sections 3.8 and 5.3 of OPP 501 effective March 1, 2008 describe the requirements. The AESO and BC Hydro cooperated in developing the requirements to allow the Harvest load to connect as quickly as possible while minimizing the potential impact on existing customers.

Sections 3.8 and 5.2 of OPP 501 effective March 1, 2008 are provided below for reference.

**3.8 Curtailing new BC Hydro area load addition in the Northwest Area**

- The new BC Hydro load addition (effective March 1, 2008) in the Northwest area will be curtailed under the following system condition:
  - If the Rainbow area minimum generation requirements as specified in Table 3 cannot be met by the combined generation of FNG, RL1, RB5 and RB2Or
  - When it is required to enable any load tripped by the under voltage load shedding (UVLS) scheme in the Rainbow Area

- If the above mentioned system condition occurs, the SC will issue a directive to the British Columbia Transmission Corporation (BCTC) Operator to curtail the required load within 20 minutes as described in Section 5.2.

## 5.2 Managing Rainbow area minimum generation requirements

The SC will:

1. Determine the RAL as displayed on the video wall.
  2. Determine the Rainbow area minimum generation requirement by using Table 3 or as required to maintain area voltages.
  3. Check the status of Rainbow #1, #2, #3, #4 and #5, and Fort Nelson generators and the amount of their generation output dispatched in the energy market.
  4. Verify if the minimum generation requirements specified in Table 3 are met by the combined generation output as identified in step 3 and the number of generators currently online to provide MW.
  5. If the requirements are not met, issue TMR dispatches/directives according to the dispatch/directive order **up to step 6** as specified in Section A of confidential Appendix A.
  6. If the minimum generation requirements are still not met, direct the BCTC operator to curtail the new BC Hydro area load addition (effective March 1, 2008) to a maximum of 1.5 MW within 20 minutes. Refer to Section D of confidential Appendix A for details of the new BC Hydro area load addition and the script.
  7. Confirm that the BC Hydro area load in the Northwest area is at or below 30 MW. Note: BC Hydro area load in the Northwest area is calculated as:
    - FNG Gross generation + flow of 7L81 when 7L81 flows from AB to BC , or
    - FNG Gross generation - flow of 7L81 when 7L81 flows from BC to AB
  8. After curtailing the new BC Hydro area load addition, if the minimum generation requirements are still not met:
    - a. Notify the ATCO Electric Transmission Operator of the increased risk to area load.
    - b. Monitor area voltages and follow the procedures in Section 5.4.
  9. When the system returns to normal and the minimum generation requirements are met, and conditions allow:
    - a. Call the BCTC operator to permit the restoration of the load curtailed in step 6.
    - b. If the ATCO Electric Transmission Operator has been notified per step 8.a, notify the ATCO Electric Transmission Operator that the area risk is back to normal.
- (d) The AESO would generally expect to treat any future new loads, or increases to existing loads, in a similar manner as the Harvest load until appropriate transmission system infrastructure can be provided to alleviate system constraints. Please refer to Information Response HARVEST.AESO-002 (e) for additional information.

**Reference:** Application, page 4 of 8, lines 8 – 13.

**Preamble:** It is suggested that the AESO Board has been advised of the costs of incremental TMR dispatch associated with accommodating the additional 10 MW of load in British Columbia and that the AESO Board is supportive of the proposed approach to respond to the request for service to increased load in British Columbia through incremental TMR dispatch or other means as considered reasonable by the AESO.

**Request:**

- (a) Did the AESO Board approve, prior to the AESO's application for approval of Rider H, the costs of incremental TMR dispatch associated with accommodating the additional 10 MW of load in British Columbia? If not, explain why the application was filed in advance of such approval being obtained.
- (b) Has the AESO Board approved the costs of incremental TMR dispatch associated with accommodating the additional 10 MW of load in British Columbia?
- (c) Was the AESO Board advised, prior to the AESO's application for approval of Rider H, of the decreased reliability of service to Alberta loads in the Rainbow Area that will result from the proposed incremental TMR dispatch? If so, provide a copy of all reports, briefing notes, memoranda etc. provided to the AESO Board in that regard. If not, explain why not.
- (d) Has the AESO Board been advised of the decreased reliability of service to Alberta loads in the Rainbow Area that will result from the proposed incremental TMR dispatch? If so, provide a copy of all reports, briefing notes, memoranda etc. provided to the AESO Board in that regard. If not, explain why not.
- (e) Provide a complete explanation of all means of responding to the request to serve the additional 10 MW of load in British Columbia, other than incremental TMR dispatch, that have been considered by the AESO and provide a copy of all related studies, reports, analyses, assessments, etc. If the AESO has not considered other means, explain why not.

**Response:**

- (a-b) As contemplated by the *Transmission Regulation*, the AESO Board approves the forecast of total ancillary services costs for AESO budget purposes. The AESO Board does not pre-approve any particular TMR expense, but approves contracts for TMR service that are expected to exceed \$10 million per year. The AESO Board has approved the TMR Contract for the Rainbow 2 generating unit.

- (c-d) The AESO has revised Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation to mitigate the potential impact on reliability to Alberta loads in the Rainbow Area, relative to that which was described in the application, as discussed in Information Responses Comm.AESO-001 (c), HARVESET.AESO-002 (a-d), and HOL.AESO-003 (a-c).

The AESO Board was briefed with regard to the overall approach described in the Fort Nelson Rider H application, and the potential impacts on costs and reliability, prior to the AESO's filing of the application.

- (e) The AESO reviewed the following options that could potentially accommodate the additional 10 MW of load in British Columbia, other than incremental TMR dispatch.

<b>Description</b>	<b>Details</b>	<b>Timing</b>	<b>Estimated Cost</b>
Northwest Alberta transmission development	As approved in EUB Order U2006-205 dated August 17, 2006	4 years	\$300 million
Remedial Action Scheme (RAS) to trip new load for loss of Fort Nelson generator	Detailed engineering studies required to coordinate RAS and UVLS; requires high-speed communications	1-2 years to design and install	Up to \$10 million
Static VAR compensator (SVC) in Fort Nelson to provide voltage support	Detailed engineering studies to determine if voltage support adequate	1-4 years	\$10-20 million
Revise treatment of Fort Nelson interconnection to radial status with potential islanding	Existing contracts need to be replaced; material impacts on Fort Nelson reliability	At least 6 months	Minimal

These options were discussed and reviewed with BC Hydro, but no detailed studies were completed as the implementation timing for each option would not allow the immediate interconnection of the additional load.

These options will be re-assessed in the context of the planning assessment of long-term options for serving load in the Fort Nelson and Rainbow Lake areas, as discussed in Information Response Comm.AESO-003.

**Reference:** Application, page 4 of 8, lines 41 – 43.

**Preamble:** Reference is made to a long term transmission plan for the Rainbow Area.

**Request:**

- (a) Does the transmission system in the Rainbow Area currently meet all applicable Western Electricity Coordinating Council ("WECC") reliability standards or criteria? If not, provide a detailed description of the ways in which the transmission system in the Rainbow Area fails to meet all applicable WECC reliability standards or criteria.
- (b) Is it the expectation of the AESO that, once the Northwest Alberta Transmission Development is complete, the transmission system in the Rainbow Area will meet all applicable WECC reliability standards or criteria? If not, provide a detailed description of the ways in which the transmission system in the Rainbow Area would fail to meet all applicable WECC reliability standards or criteria.
- (c) Provide a detailed explanation of the impact that the proposed additional 10 MW of load in British Columbia will have on the reliability of the transmission system in the Rainbow Area.
- (d) Does the AESO distinguish between serving British Columbia load and Alberta load in its planning, prioritization, curtailment or other decisions or operations? Explain.
- (e) Does the AESO consider the operation of TMR generation to be equivalent to transmission facilities (e.g., transmission lines, substations, etc.) for purposes of assessing transmission system reliability whether in a specific area of Alberta or generally? Explain.

**Response:**

- (a) No, the requirements are not currently met for loss of two elements (either generation or transmission). The AESO has requested the distribution facility owners in the area, namely, ATCO Electric and BC Hydro, to implement an Automatic Under Voltage Load Shed (UVLS) scheme for the Rainbow Area to comply with WECC performance criteria. Please refer to Information Response HARVEST.AESO-001 (a) for additional information.
- (b) Yes, once the Northwest Alberta Transmission Development upgrades are completed in 2011 and the UVLS scheme maintained, the area will meet all applicable WECC reliability standards and criteria.
- (c) The impact on reliability is described in section 3.2 of the AESO's Interim Fort Nelson Rider H application. It indicates a slight decrease in reliability during periods where Rainbow Area load is greater than 130 MW.

Since filing the application, the AESO has further assessed Rainbow Area generator availability to determine the probability of there being two or more generators out of service at the same time. The results are as follows:

- Out of four available units, the probability of two or more units out of service is about 1%.
- Out of three available units, the probability of one or more units out of service is about 0.5%.

Please refer to Information Response Comm.AESO-001 (b) for additional information.

- (d) Generally no, except as provided for in revisions to Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation effective March 1, 2008. In Decision 2005-096 on the AESO's 2005/2006 General Tariff Application, the Alberta Energy and Utilities Board concluded (page 33), in the prevailing circumstances, as follows:

*The Board has determined that the following should form the basis for charges to BCH for Fort Nelson services. DTS service charges should include the following:*

- 1. the postage stamp rate for bulk wires costs;*
- 2. the greater of the postage stamp rate for local wires costs or the actual cost of the AE line providing service to Fort Nelson;*
- 3. the postage stamp rate for the AESO's own costs and other industry costs; and the postage stamp rates for each of operating reserve charges, voltage control (TMR) and other system support charges....*

*... the AESO is directed to continue to provide DTS and STS services to Fort Nelson on the basis set out above....*

The AESO considers that providing DTS service to Fort Nelson load under "postage stamp" tariff provisions under the currently-approved tariff requires that the service be comparable to that which would be provided to increased Alberta load in the Rainbow Area.

As noted on page 2 of the Interim Fort Nelson Rider H Application, the AESO's view is that the current rate "does not necessarily apply in perpetuity regardless of changing circumstances in the area." As discussed in the response to Comm.AESO-003, the AESO expects to apply for a final rate determination for service to BC Hydro in the Fort Nelson area in the latter half of 2008, including an assessment of impacts on Rainbow Area reliability.

- (e) Yes. AESO studies for the purpose of assessing system reliability are based on the Reliability Criteria, which do not differentiate between generator and transmission circuit outages when considering system adequacy and security.

**Reference:** Application, page 5 of 8, lines 35 – 40

**Preamble:** The AESO states that the additional TMR dispatch will decrease system reliability in the Rainbow Area.

**Request:**

- (a) Did the AESO, prior to filing the Application, consult with customers in the Rainbow Area regarding the possible impact of the decreased system reliability? If so, provide a summary of the comments and concerns that the AESO received from such customers. If not, explain why not.
- (b) Assuming that the consultation referenced in part (a) was undertaken, and that concerns were raised by the customers which the AESO consulted, explain why those concerns were not discussed in the Application.

**Response:**

- (a) Yes, the AESO consulted verbally with ATCO Electric and with Husky Oil Operations regarding the possible impact. Both ATCO Electric and Husky expressed concern about the addition of load that could potentially decrease reliability, and indicated that some form of restriction should be placed on the new load to minimize the potential impact to existing customers.
- (b) As stated in the application, the AESO was satisfied that the slight decrease in reliability was within the AESO Reliability Criteria, and accordingly the potential impact on the existing Rainbow Area operation reliability did not warrant specific discussion in the application.

**Reference:** Application, page 5 of 8, lines 35 – 45

**Preamble:** The AESO states that the additional TMR dispatch will “slightly decrease current system reliability in the Rainbow Area.”

Rainbow Area minimum local generation requirement, as presently specified in OPP 501, requires three local generators to be on line when area load is less than 130 MW. If one unit is lost (N-1), two units are left running and no load is lost. This procedure complies with the AESO Category B criteria. The fourth (standby) generator is brought on line to prepare for the next contingency and re-establishes three running units. If a further unit fails (N-1-1), two units will be left running and no load will be lost. This procedure partly meets the AESO Category C criteria in the sense that two elements out of service will not create a cascading outage or a loss of load. However, if there were to be no fourth unit available then an (N-1-1) event would leave only one unit running and result in loss of load. When Rainbow Area load requires a fourth generator to run, and with no fifth TMR unit available, there is no ability to re-establish four running units if one unit trips or is unavailable and thereby partly meet the AESO Category C criteria. In the circumstances an (N-1-1) event will result in an immediate loss of load.

**Request:**

- (a) Does the AESO agree with the second paragraph of the preamble? If not, explain the specific points of disagreement.
- (b) Explain how, given the unavailability of a fifth TMR unit in the Rainbow Area, the additional TMR dispatch (as discussed in section 3.2 of the Application) will only "slightly decrease" current system reliability.
- (c) Explain in quantitative terms what is meant by “slightly decrease.”

**Response:**

- (a) The AESO disagrees. The AESO and WECC Reliability Criteria provide that for some local areas, load loss is an acceptable consequence to Category B contingencies. Load loss is always acceptable for Category C events. The AESO Criteria, which are based on the WECC Criteria, acknowledge that following multiple contingencies, load loss is inevitable. The Rainbow Area TMR generation is operated to mitigate load loss for Category B events when all transmission elements are in service. A standby TMR generator is available to provide the same mitigation if one TMR generator is not available (by definition a Category C event). If a standby generator is not available, or it has already been activated, and another contingency occurs (by definition a Category C event), some load loss will occur.

The Rainbow Area automatic Under Voltage Load Shed (UVLS) scheme is a “safety net” designed to control load curtailment and facilitate a more expedient load restoration.

- (b-c) Please refer to Information Responses Comm.AESO-001 (b) and HOL.AESO-005 (c). The probability of more than two Rainbow Area units being out of service at the same time is between 0.5% and 1%. When combined with the probability of the Rainbow Area load exceeding 130 MW and requiring dispatch of four TMR units, the probability of needing a fifth unit decreases further.

**Reference:** Application, page 5 of 8, lines 43 – 47 and page 6 of 8, lines 1 – 15

**Preamble:** The AESO describes the risk of curtailment of load services as being relatively small and generally comparable to the risk of interruptions in other areas of the province. The AESO also suggests that reliability reductions will occur 30% of the time, i.e., in those hours when the fourth TMR generator is dispatched. The AESO calculates that, under the proposed situation, the probability of a concurrent loss of two or more Rainbow Area generating units doubles (from 1% to 2%).

**Request:**

- (a) Explain in quantitative terms what is meant by “relatively small.”
- (b) Explain in quantitative terms what is meant by “generally comparable to the risk of interruptions in other areas of the province.”
- (c) Provide the details of the calculations used to determine the probabilities discussed in the preamble and copies of all relevant studies, reports, analyses, assessments, etc.
- (d) Does the risk of curtailment of load services in the Rainbow Area vary by season? If so, explain in quantitative terms.
- (e) Would the possible consequences of curtailment of load services in the Rainbow Area vary by season, e.g. freeze-up of facilities during winter months? If so, explain in qualitative terms.
- (f) Did Alberta customers raise concerns with the AESO about transmission system reliability in the Rainbow Area prior to the AESO proposing to provide the incremental service to British Columbia load? If so, provide both a detailed explanation of the concerns that were expressed and a detailed explanation of the steps that the AESO has taken to address those concerns. If the AESO has taken no such steps, explain why not.
- (g) Has the AESO considered the potential consequences to Alberta load customers of the curtailment of load services in the Rainbow Area due to an outage of one or more of the four Rainbow Area generators? If so, provide the AESO's assessment of the potential consequences and copies of all relevant studies, reports, analyses, assessments, etc. If not, explain why not.

**Response:**

- (a) The change from 1% to 2% probability (which has since been re-estimated to be a change from 0.5% to 1%) is considered relatively small. Please see Information Response HOL.AESO-005 (c) for additional information.

- (b) Many areas of the province are either fed radially from transmission and distribution facilities or, if fed from two transmission facilities, are unable to serve all loads following a second contingency.

The availability of a standby generator in the Rainbow Area is generally considered to provide greater reliability compared to other areas where reliability depends solely on radial transmission facilities. The addition of the Harvest load will result in a standby generator being utilized during times when dispatch of four TMR generators is required (i.e. it is therefore not available for standby service) and accordingly slightly decreases the reliability to a level more comparable to other areas where reliability depends solely on radial transmission facilities.

- (c) A simple binominal probability method was applied to calculate the possibility of having two or more units out of service. A historic average on-line availability of the Rainbow area units was calculated at 95.8%.
- (d) The probability of two or more generators being out of service, as discussed in Information Response HOL.AESO-005 (c), is generally between about 0.5% and 1% at all times. Other factors that have seasonal variances may affect the risk of load curtailment, but resulting seasonal differences in risk of load curtailment cannot be accurately quantified. Please refer to Information Response Comm.AESO-001 (b) for additional information.
- (e) Consequences of load curtailments are generally more severe in cold weather than in other seasons. It should be noted that even with just one generator available in the Rainbow Area, there is adequate capacity power to service heat and light requirements for industries and communities such that equipment freeze-up can be prevented, although facilities would not be able to operate at full demand.

To assist in reducing the impact of a load curtailment, curtailed load is rotated every half-hour to an hour. Furthermore, customers are advised to have their own contingency plan in case load interruption affects their business severely, as uninterrupted electrical supply is generally not guaranteed.

- (f) Yes, industrial and consumer groups raised concerns with the reliability of the existing system supplying northwest Alberta and the Rainbow Area during consultations for the Northwest Alberta Transmission Development plan. The only specific issues mentioned were number of system outages and restoration time. These concerns were incorporated into the Northwest Development plan by increasing transmission capacity into the region. Additional transmission capacity was also initially planned for the Rainbow Area for 2009 to reduce the reliance on TMR generation. However, due to significant transmission construction activity in northern Alberta, ATCO Electric proposed a 2011 completion date.
- (g) The revised Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation, effective March 1, 2008, provides a level of reliability in area operation which is similar to past operation and aligns with the AESO Reliability Criteria. With respect to the provision of detailed engineering reports, please see Information Response HARVEST.AESO-001 (a).

**Reference:** Application, page 6 of 8, lines 29 – 31.

**Preamble:** The AESO states that it considers that the impact on reliability associated with serving the additional 10 MW of load in British Columbia is comparable to that which would result from serving increased Alberta load in the Rainbow Area and that such an impact is reasonable.

**Request:**

- (a) Provide a complete explanation, including specific references to legislation, regulations, and AESO rules, as to how the AESO considers that it can lawfully take actions (including requiring TMR) that have the effect of decreasing reliability of transmission service in Alberta in order to provide the proposed increased service to British Columbia load. Include an explanation as to how the AESO considers that requiring the fourth (stand-by) TMR unit to run to supply British Columbia load is consistent with the authority of the AESO to require operators to run generators in “abnormal operating conditions,” or on a short term basis in order to supply Albertans with safe, adequate and reliable energy (see section 18 of the Transmission Regulation).
- (b) Provide a complete explanation, including specific references to legislation and regulations, as to whether and if so why, the AESO considers that it has an obligation (legal or otherwise) and the requisite legal authority to provide incremental service to load in British Columbia notwithstanding that doing so reduces the reliability of transmission service in Alberta.
- (c) Assuming that the AESO can lawfully provide incremental service to British Columbia load notwithstanding the consequent adverse impact on reliability of transmission service in Alberta, provide a complete explanation as to whether, and if so why, the AESO considers that doing so would be in the Alberta public interest.
- (d) Did the AESO require (as consideration for serving the additional 10 MW of load in British Columbia) BC Hydro to indemnify Alberta loads from any and all damages or losses caused by or arising from load services curtailment as a consequence of the proposed incremental service? If not, explain why not, including a discussion as to why, in the view of the AESO, the principles established in Alberta Energy and Utilities Board Decision 2001-71 should not apply in this case.
- (e) Are there currently other outstanding requests for service for additional load in the Rainbow Area? If so, provide a detailed description of the requested service, including the load sizes and estimated in-service dates.
- (f) Does the AESO anticipate serving additional load in the Rainbow Area in the next three to four years? If so, provide a detailed explanation of the nature, location, and size of this anticipated load and of the AESO’s plans to serve it. Provide copies of all relevant studies, reports, analyses, assessments, etc.

- (g) Provide a detailed explanation of how the AESO plans to maintain or improve transmission system reliability in the Rainbow Area.
- (h) Provide both the original schedule and an up-to-date schedule for the completion of each principal phase of the Northwest Alberta Transmission Development.
- (i) On what basis, from what sources, in what quantities, and for what duration does the AESO expect to make use of TMR in the Rainbow Area during each phase of the development of the Northwest Alberta Transmission Development?
- (j) Has the AESO considered the possibility of making either or both of the existing but “houred-out” Rainbow generating units (i.e., Rainbow 1 and 3) available to run as additional TMR units? If so, describe and explain any action that the AESO has taken or intends to take in that regard. If not, explain why not.
- (k) Does the AESO intend to ensure the development of additional TMR generating units in the Rainbow Area? If so, describe and explain any action that the AESO has taken or intends to take in that regard. If not, explain why not.
- (l) Will Rainbow Area TMR be required after completion of the Northwest Alberta Transmission Development? If so, on what basis, from what sources, in what quantities, and for what duration?
- (m) Provide a detailed description of how the AESO would maintain transmission system reliability in the event of a catastrophic failure or long term unavailability of a Rainbow Area TMR generating unit. Include a discussion of any load shedding process (e.g., Remedial Action Scheme) that may be implemented for such purposes.

**Response:**

Note: Parts of this information request seek information based upon a consideration of legislation, and are thus questions requiring legal interpretation, argument, or both. Nevertheless, the AESO provides the following responses to assist the Commission, and reserves the right, as necessary, to further provide such submissions as it considers appropriate on matters of legal interpretation.

- (a-b) The service from Alberta to the Fort Nelson area in British Columbia has evolved over time since the interconnection was built in 1991. The terms for the service were most recently addressed in Decision 2005-096 on the AESO’s 2005/2006 General Tariff Application, issued by the Alberta Energy and Utilities Board (EUB) on August 28, 2005. In that decision, the EUB confirmed on page 32 that the AESO does not have an express obligation to serve BC load under the *Electric Utilities Act* (EUA) or associated regulations:

*The Board cannot ignore the obvious – Fort Nelson is not located in Alberta. As such, the Board does not consider that the AESO is obliged to offer the postage stamp service that it is obligated to provide to Alberta customers.*

However, given the history of the service, in the same decision the EUB directed the AESO to offer a modified postage stamp service to Fort Nelson (page 33):

*The Board has determined that the following should form the basis for charges to BCH for Fort Nelson services. DTS service charges should include the following:*

- 1. the postage stamp rate for bulk wires costs;*
- 2. the greater of the postage stamp rate for local wires costs or the actual cost of the AE line providing service to Fort Nelson;*
- 3. the postage stamp rate for the AESO's own costs and other industry costs; and*
- 4. the postage stamp rates for each of operating reserve charges, voltage control (TMR) and other system support charges....*

*...the AESO is directed to continue to provide DTS and STS services to Fort Nelson on the basis set out above....*

Notwithstanding, as explained below, there is a limit to load increases that can be accommodated through the existing transmission system. The AESO recently revised Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operation (effective March 1, 2008, as discussed in Information Response HOL.AESO-003) to mitigate impacts on other customer of the accommodation of the BC Hydro load increase. BC Hydro has been advised that any further load that can be accommodated would be subject to similar treatment, as discussed in Information Response HOL.AESO-003 (d).

As stated in the Application, the potential reliability impact on the existing loads (including Husky) is within acceptable standards. Please refer to Information Response HOL.AESO-008 (b) for additional information.

Section 18 of the *Transmission Regulation* primarily contemplates abnormal operating conditions. However, the AESO is not restricted to directing must-run generation solely under abnormal conditions. It may make arrangements as needed for the appropriate operation of the transmission system, including the use of must-run service, generally under sections 16, 17, and 30 of the EUA and under section 51(1) of the *Transmission Regulation*.

As well, where the AESO includes TMR generation in its forecasts (i.e., as "foreseeable" TMR) as is done for the Rainbow Area, that TMR generation is considered to be part of normal operating conditions. This is explicitly recognized, for example, in section 31(3) of the *Transmission Regulation* which states:

*For greater certainty, abnormal operating conditions referred to in subsection (2)(c) do not include generation from transmission must-run generating units if the ISO includes those units in its transmission loss forecasts.*

- (c) The AESO is of the view it is in the public interest to provide service across provincial boundaries on reasonable terms, including consideration of operational impacts, cost impacts, and appropriate cost allocation for the circumstances. This is common practice, particularly where one jurisdiction's system (in this case, the AIES) is significantly more accessible to the extra-jurisdictional load (in this case, Fort Nelson) than the "domestic" system (in this case, that of BC Hydro and BCTC). Other Alberta-related examples

include service to the Village of Coutts from Marias River Electric Cooperative in Montana and service to a transmission-connected customer near Hayter, Alberta, from SaskPower.

This view was explicitly supported by the EUB in Decision 2005-096, where it stated (page 32):

*Equally, however, the Board considers that the rate charged to BCH for Fort Nelson service must be just and reasonable, in accordance with established regulatory principles.... The Board also believes that the rate charged for Fort Nelson service must be designed in such a manner that it will provide a fair and reasonable template that can be used in determining rates for other inter-provincial service, be it service provided by the AESO to other BC customers or by BCH to customers located in Alberta.*

- (d) No. The AESO did not consider the circumstances of the request for increased contract capacity to be unique, which the AESO understands to have been a factor in Decision 2001-71. The AESO's currently-approved terms and conditions of service, as well as the references discussed in parts (a-c) above, adequately address matters respecting service to the increase in BC Hydro load.
- (e) The AESO has no outstanding requests for service to additional load in the Rainbow Area. The AESO understands that BC Hydro has been approached by another customer seeking to connect additional load, but BC Hydro has not yet applied to the AESO for a further contract capacity increase.
- (f) The AESO is currently reviewing with BC Hydro information relating to future additional loads in the Rainbow Area. At this time there is no firm forecast of additional loads in the next three to four years, although certain speculative information exists for such additional loads. A forecast of future load in the Rainbow Area will be part of the long-term planning assessment discussed in Information Response Comm.AESO-003.
- (g) Transmission system development will be the result of the planning assessment currently being undertaken by the AESO with BC Hydro and the BC Transmission Corporation, as discussed in Information Response Comm.AESO-003.
- (h) The original schedule and the revised in-service dates for the Northwest Alberta Transmission Development plan area as follows:

<b>Transmission Development</b>	<b>Original In-Service Date</b>	<b>Revised In-Service Date</b>
<b>Phase 1 – Part A</b>		
Reactive support in the Peace River/Grand Prairie Region (7 sites)	Q4/2007	2007-2009
Install 240/144 kV transformer at Louise Creek 809S	Q4/2007	April 2008
<b>Phase 1 – Part B</b>		
Little Smoky 813S +/- 100 MVar SVC	Q4/2009	July 2009
Wesley Creek 834S 240/144 kV transformer upgrades	Q4/2009	
Brintnell 876S to Wesley Creek 834S S/C 240 kV line	Q4/2009	April 2010
New Meikle 905S substation	Q4/2009	April 2010
Wesley Creek 834S to Meikle 905S D/C 144 kV line	Q4/2009	April 2010
New Arcenciel 930S substation	Q4/2009	April 2011
Arcenciel 930S to Ring Creek 853S 144 kV line	Q4/2009	April 2011
Sulphur Point 828S to High Level 786S 144 kV line	Q4/2009	April 2011
Arcenciel 930S to Ring Creek 853S 144 kV line	Q4/2009	April 2011
Arcenciel 30 MVar capacitor bank,	Q4/2009	April 2011
Arcenciel +/- 30 MVar SVC	Q4/2009	Sept 2011
Arcenciel +50/-30 MVar synchronous condenser	Q4/2009	Sept 2011

- (i) The AESO will adjust the TMR requirement for the Rainbow Area each time facilities are added as part of the Northwest Alberta Transmission Development. Specific quantities, durations, and sources aren't known at this time.
- (j) Please refer to Information Response Comm.AESO-002 (a).
- (k-l) The requirement for mid-term and long-term TMR service in the Rainbow Area will be considered as part of the planning assessment discussed in Information Response Comm.AESO-003.
- (m) Catastrophic failures or long-term unavailability that result in inability to serve all load generally result in load being curtailed on a rotational basis using the remaining system capability, and initiation of emergency measures to return capability to the transmission system. The emergency measures can include temporary transmission facility construction and portable generation.

**Reference:** Application, page 5 of 8, lines 35 – 45.

**Preamble:** The AESO states that the additional TMR dispatch will “slightly decrease system reliability in the Rainbow Area.”

In late January, 2008, northern Alberta, including the Rainbow Area, experienced extremely cold weather. During this period, the AESO and ATCO Electric Limited notified Husky that the electricity service for Rainbow Lake, Alberta was in crisis and that electricity supply to the Husky Rainbow Lake facilities might be lost. A loss of electricity supply to the Husky Rainbow Lake facilities during extreme cold weather could result in severe consequences and significant financial expense/loss to Husky.

**Request:**

- (a) Provide a complete description and explanation of the circumstances that resulted in the system conditions described in the preamble.
- (b) Provide a complete description and explanation of the availability and operation of generating units in the Rainbow Area during the period described in the preamble.
- (c) Provide a complete description and explanation of how the proposed additional 10 MW of load in British Columbia may: (i) impact the chance of a similar situation occurring in future; and, (ii) affect the ability of the AESO to avoid the loss of Rainbow Area load in comparable circumstances in the future.

**Response:**

- (a-b) The increased risk of loss of electricity supply in January 2008 was due to generator derates coincident with the cold weather. As a result, there was not enough generation to meet the TMR requirement at the time. Had another outage occurred, some of the Rainbow Area load would have been curtailed. The conditions resulting in the generator derates were resolved and TMR requirements were restored within one day.

The AESO is currently reviewing the causes of the generator derates with the generator owners including the Rainbow Lake 1 generator, partially owned by Husky. The AESO expects that generators will perform as well in cold weather as during any other time.

- (c) Until the planned Northwest Alberta Transmission Development is completed in the Rainbow Area, the AESO's Operating Policies and Procedures (OPP) 501 regarding Northwest Area Operations, revised March 1, 2008, provides that Harvest load will be curtailed when TMR generation is not adequate in the Rainbow Area.