Reference: Section 3 – 2009 Deferral Accounts, page 32, Table 3-1, line 27 and page 40, paragraph 193, Technical Meeting Question 005(a-b)

Request:

(a) Please provide a history of approved and actual Black Start services for the last 8 years and confirm the percentage that actual contracted amounts have been below the approved budget amounts.

(b) Please describe the potential consequences on the economy of Alberta and on Albertans if the transmission and generation system were to collapse and Black Start services were required but not successful in restoring power on a timely basis. In the explanation, describe how inadequate Black Start services could increase the risk and magnitude of these potential consequences.

(c) Please confirm that there can be varying degrees of impact in restoration of power and that longer term blackouts are likely to result in an extended period of inadequate power generation and plant productivity in other industries, even after power has been restored, due to equipment and process failures and long lead times on replacement of major equipment.

(d) Please provide an explanation of how the size, location and type of Black Start services is determined if contingencies and sufficient geographical coverage are taken into account. Also confirm whether the amount set out in the approved budget is or is not consistent with that estimated requirement. If the approved budget is not consistent with the estimated requirement, provide a full explanation.

(e) Please confirm that the AESO has contracted in the past five years for at least the minimum of Black Start services at all times. If not, provide a full explanation and identify when contract services were inadequate.

(f) Regarding the AESO seeking “additional providers to provide redundancy in the event of contingencies”, please identify the nature of the contingency driving this need.

(g) Please provide an explanation of what is meant by ensuring “sufficient geographical coverage to enable prompt system restart times”. Include the differences in restart times that are of concern and the potential consequences of delays on loads and generators.

(h) Please provide an explanation of why signing contracts with additional service providers in 2009 did not materialize. Include in this explanation any barriers to contracting and what the AESO has done to overcome these barriers. Also, please confirm that “the inability to reach agreements with potential suppliers” is a recurring problem over the years, provide the reasons why agreements cannot be obtained and what has been done about it.
(i) Are there any cases where the AESO obtains Black Start services outside of a signed contract? If yes, please provide details.

Response:

(a) Please see the following table for black start service costs for 2002-2009.

<table>
<thead>
<tr>
<th>Production Year</th>
<th>Approved Forecast $000 000</th>
<th>Recorded Costs $000 000</th>
<th>Variance Over (Under) $000 000</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$2.94</td>
<td>$1.64</td>
<td>($1.30)</td>
<td>(44.2%)</td>
</tr>
<tr>
<td>2008</td>
<td>2.03</td>
<td>1.83</td>
<td>(0.20)</td>
<td>(9.8%)</td>
</tr>
<tr>
<td>2007</td>
<td>2.83</td>
<td>1.99</td>
<td>(0.84)</td>
<td>(29.8%)</td>
</tr>
<tr>
<td>2006</td>
<td>2.30</td>
<td>1.84</td>
<td>(0.42)</td>
<td>(18.7%)</td>
</tr>
<tr>
<td>2005</td>
<td>2.30</td>
<td>1.63</td>
<td>(0.67)</td>
<td>(29.0%)</td>
</tr>
<tr>
<td>2004</td>
<td>2.20</td>
<td>1.00</td>
<td>(1.20)</td>
<td>(54.5%)</td>
</tr>
<tr>
<td>2003</td>
<td>2.20</td>
<td>1.02</td>
<td>(1.18)</td>
<td>(53.9%)</td>
</tr>
<tr>
<td>2002</td>
<td>1.49</td>
<td>1.50</td>
<td>0.01</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

(b) The potential consequences of a sustained blackout on the Alberta economy would be significant and the effects on Albertans would be substantial as access to essential services would be disrupted. While no system-wide blackouts have ever occurred in Alberta, published estimates of the cost of the 2003 Northeastern Blackout have ranged from $7,000/MWh to $11,000/MWh. Inadequate black start resources may result in increased system restart times which would exacerbate the economic and social effects of a blackout. The AESO has maintained adequate black start resources to ensure a prompt system restart at all times.

(c) Confirmed.

(d) The size, location, type, and number of black start resources are determined based on evaluations of several factors including the following:

- transmission system configuration and voltage characteristics;
- coal-fired generation startup times and motor starting power requirements;
- access to loads for system stabilization during initial restoration;
- natural gas supply limitations;
- water supply limitations for hydro generating facilities; and
- zones with high risk of events such as forest fires, tornadoes, heavy snowfall, or high wind.

The approved budget is consistent with the estimated requirements.

(e) Confirmed. The AESO has contracted for sufficient black start services at all times in the past five years.

(f) The contingencies include weather conditions that could damage the transmission system and render a black start resource unusable, the failure of a black start resource to start when required, the loss of fuel supply to a black start resource, and the division of the transmission system into one or more electrical islands.
(g) Ensuring sufficient geographical coverage refers to procuring black start services from resources in different areas of the transmission system that are exposed to different weather risks, such as high winds and heavy snow loading, to reduce the likelihood that multiple resources may be affected by the same weather problem. The AESO’s objective is to begin restarting the transmission system as soon as possible following a blackout. Long delays in the time it takes to restart will result in longer startup times for large coal-fired generators which may result in longer restart times for large industrial processes. The AESO has sufficient black start resources under contract to ensure that the transmission system can be restarted quickly following a blackout.

(h) The AESO treats information related to contract negotiations with counterparties as confidential. However, the risks associated with providing black start service which, unlike other ancillary services, cannot be practically tested, have been a significant concern for potential black start service providers.

(i) No, the AESO contracts for all of its black start service requirements.