STAFF REVIEW PROCEDURE:

Proponent Environmental Impact Statement (EIS)
For a New Nuclear Power Plant

SRP-2.01-EIS-11NNNN-014.2

Rev. 000

Alternative Means of Undertaking the Project and
Alternatives to the Project

Directorate of Regulatory Improvement and Major Projects Management
New Major Facilities Licensing Division
Staff Review Procedures have been developed by the CNSC staff, as internal working documents, to be used by CNSC staff to assist them in the conduct of regulatory reviews of a potential licensee’s (proponent) Environmental Impact Statement (EIS), as part of its licence application and environmental assessment process for a new nuclear power plant in Canada. They are not regulatory documents, although their respective topics of assessment and criteria are based on regulations under the Canadian Environmental Assessment Act.

The initiative to develop Staff Review Procedures was undertaken in order to ensure a consistent application of the internal processes for the review of an EIS for a new nuclear power plant, and to improve the efficiency and effectiveness of such reviews.

Staff Review Procedures are considered by CNSC staff to be “living documents”, which will evolve based on the experience gained from EIS reviews.

Environmental assessments (EAs) are carried out to meet the requirements of the *Canadian Environmental Assessment Act* (CEAA). EAs identify whether a specific project is likely to cause significant environmental effects, and determine whether those effects can be mitigated.

For new nuclear power plants, the Canadian Nuclear Safety Commission initiates the EA process when a proponent applies under the *Nuclear Safety and Control Act* (NSCA) for a *Licence to Prepare Site* (Section 24(2) of NSCA) and submits a complete Project Description (as per Section 5 of CEAA). Before any licensing decision can be made, the EA must be completed.

An Environmental Impact Statement (EIS) is prepared by a proponent as part of the EA process and submitted pursuant to CEAA to support the site preparation, construction, operation, decommissioning and abandonment of a new nuclear power plant.

An EIS will be reviewed against the “EIS Staff Review Procedures. The procedures represent CNSC expectations and guidance supporting the assessment of an EIS by CNSC staff, and are intended to augment and support EA recommendations by staff to the Commission tribunal.
<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Rev. #</th>
<th>Section</th>
<th>Changes Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-10-08</td>
<td>000</td>
<td>All</td>
<td>New Document – Issued under Document Change Package (DCP) 3297482</td>
</tr>
</tbody>
</table>
1. **Topic of Review**

The objective of this procedure is to determine if the alternatives to the project, and alternative means of carrying out the project have been adequately assessed in the EIS, and that the methodology applied was appropriate.

Addressing alternatives to the project and alternative means of carrying out the project emphasizes the use of environmental assessment principles and tools for decision-making and planning, in addition to a project impact assessment tool. The assessment of alternatives to the project and alternative means of carrying out the project is bounded by the purpose of the project as articulated in the proponent’s EIS.

2. **Criteria and Objectives**

The information submitted addresses the information criteria in the “Alternatives to the Project” and “Alternative Means of Carrying out the Project” sections of the EIS Guidelines for the specific project.

The EIS is to address the expectations in the Canadian Environmental Assessment Agency’s Operational Policy Statement on “Addressing “Need for”, “Purpose of”, “Alternatives to” and “Alternative Means” under the Canadian Environmental Assessment Act” November 2007 (http://www.ceaa-acee.gc.ca/013/0002/addressing_e.htm).

Analysis of alternatives to the project describes the process the proponent used to determine that the project is viable (technically, economically and environmentally). The level of assessment should reflect the more conceptual nature of the alternatives to the project at this stage of the process.

The assessment of “alternatives to” a project is bounded by the purpose of the project as articulated in the proponent’s EIS. The information needs to be complete and include references to more detailed information, as appropriate. Assumptions supporting the information must be clearly identified and justified.

The assessment of alternate means of carrying out the project has been addressed for each of the project stages:

- Site Preparation;
- Construction;
- Operation and Maintenance;
- Modifications;
- Decommissioning and Abandonment;
- Waste and Used Fuel Management.
In particular, the assessment should include the following:

- siting of new nuclear reactors in different locations within the existing site;
- siting of new nuclear reactors in locations outside the existing site;
- switchyard design;
- reactor design technology, taking into consideration megawatt electrical MWe output, moderator, coolant, and fuel enrichment;
- condenser cooling water system (cooling towers or intake/discharge of lake water through underwater tunnels);
- waste management strategies for low and intermediate level radioactive waste and used fuel;
- timing options for various components and phases of the project.

**Alternatives to a Project**

Alternatives to the project have been established in relation to the project need and purpose, and from the perspective of the proponent; and, Analysis of alternatives to the project validates that the preferred alternative is a reasonable approach to meeting need and purpose and is consistent with the aims of the Act.

The following has been addressed:

- alternatives to the project have been identified,
- criteria to identify the major environmental, economic and technical costs and benefits have been developed, and
- the preferred alternative to the project based on the relative consideration of the environmental, economic and technical benefits and costs has been identified.

**Alternative Means of Carrying out the Project**

The following has been addressed in assessing “alternative means” of carrying out a project:

- For identification of alternative means to carry out the project:
  - criteria to determine the technical and economic feasibility of the alternative means have been identified have been developed,
  - each alternative means has been described in sufficient detail, and
  - the identified alternative means are technically and economically feasible.

- For identification of the environmental effects of each alternative means:
  - elements of each alternative means that could produce environmental effects have been identified.

- For identification of the preferred means:
  - the preferred means based on the relative consideration of environmental effects, and of technical and economic feasibility have been identified,
  - criteria that identify alternative means as unacceptable on the basis of significant adverse environmental effects have been determined and applied, and
criteria to examine the environmental effects of each remaining alternative means to identify a preferred alternative have been determined.

3. Review Procedure

The review, documentation of assessment results and report approval will be conducted in accordance with the project-specific Assessment Plan. Results of the review will be presented in a Review Report template that is included in the project-specific Assessment Plan. The report is to be approved by the appropriate signing authorities. The approved report will be assigned an E-DOCS number under File 2.01 for the appropriate facility.

The Review Lead, as identified in the project-specific Assessment Plan, verifies that the information criteria listed in Section 2 has been satisfied, and is credible.

Analysis of alternatives to the project should describe the process the proponent used to determine that the project is viable (technically, economically and environmentally). The level of assessment should reflect the more conceptual nature of the alternatives to the project at this stage of the process.

The assessment of “alternatives to” a project is bounded by the purpose of the project as articulated in the proponent’s EIS. The information needs to complete, and include reference to more detailed information, as appropriate. Assumptions supporting the information must be clearly identified and justified.

4. Evaluation Conclusions and Recommendations

At the end of the review, the reviewer must arrive at one of the following conclusions and recommendations:

ALTERNATIVES TO A PROJECT

- Information presented in the EIS is sufficient to as to enable a comparison of the project with its alternatives, and to determine that the methodology applied was appropriate; or

- Information presented in the EIS is either not sufficient to enable a comparison of the project with its alternatives, or the methodology applied was not appropriate. The conclusions should summarize the instances where the information is not sufficient or credible.
ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT

- Information presented in the EIS is sufficient to determine if “Alternative Means of Carrying out the Project” have been assessed adequately so as to identify the preferred means for carrying out the project, and the methodology applied was appropriate; or

- Information presented in the EIS is either not sufficient to determine if “Alternative Means of Carrying out the Project” so as to identify the preferred means for carrying out the project, or the methodology applied was not appropriate. The conclusions should summarize the instances where the information is not sufficient or credible.