



Operational Policy Statement

Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the *Canadian Environmental Assessment Act, 2012*

November 2015

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Document Information

Disclaimer

This Operational Policy Statement (OPS) is for information purposes only. It is not a substitute for the [Canadian Environmental Assessment Act, 2012](#) (CEAA 2012) or its regulations. In the event of an inconsistency between this OPS and CEAA 2012 or its regulations, CEAA 2012 or its regulations would prevail.

For the most up-to-date versions of CEAA 2012 and regulations, please consult the [Department of Justice website](#).

Updates

This document may be reviewed and updated periodically. To ensure that you have the most up-to-date version, please consult the [Policy and Guidance](#) page of the Canadian Environmental Assessment Agency's website.

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If you have used or consulted the *Operational Policy Statement: Determining Whether a Project is Likely to Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012*, we would like to hear from you.

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Thank you for taking the time to contribute. Your feedback is appreciated.

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1.0 Purpose

This document supports the implementation of [Canadian Environmental Assessment Act, 2012](#) (CEAA 2012) provisions related to determining whether a designated project is likely to cause significant adverse environmental effects. Specifically, it provides guidance on how to apply the provisions when the Canadian Environmental Assessment Agency (the Agency) is the responsible authority.

The document informs the preparation of Agency documents such as the Environmental Impact Statement (EIS) Guidelines and the Environmental Assessment (EA) report. It is intended to support proponents of designated projects in the preparation of an EIS, in conjunction with other Agency policy and guidance instruments. It also provides direction to Agency employees throughout the EA of a designated project in their interactions with those engaged in federal EAs, such as proponents, review panel members, federal authorities, other jurisdictions, Aboriginal groups and the public.

2.0 Application

This document is intended for use in an EA of a designated project for which the Agency is the responsible authority, including EAs by review panel.

When the National Energy Board (NEB) is the responsible authority, direction and guidance can be found in the NEB filing manual. Applicants seeking guidance on nuclear projects should refer to the Canadian Nuclear Safety Commission's regulatory framework.

The term "project" refers to designated projects under CEAA 2012 for which the Agency is the responsible authority, and "project EA" refers to the EA of designated projects conducted under CEAA 2012 for which the Agency is the responsible authority.

Throughout the document, the term "environmental effects" refers to environmental effects as described in section 5 of CEAA 2012.

This guidance replaces the Agency's 1994 *Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects* and is for application under CEAA 2012. The 1994 reference guide will continue to apply for project EAs initiated under the former *Canadian Environmental Assessment Act* and are being completed under the transitional provisions of CEAA 2012.

3.0 Relevant Provisions of CEAA 2012

Section 5 of CEAA 2012 describes the environmental effects that must be considered in the implementation of the legislation.

Section 19 specifies the factors to be taken into account in the EA of a designated project, including the environmental effects described in section 5 and the significance of these effects. This includes cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out, as well as environmental effects of accidents and malfunctions that may occur in relation to the designated project. Section 19 also requires that the EA of a designated project take into account mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects.

For projects where the Agency is the responsible authority, subsection 52(1) requires the Minister of the Environment (the Minister) to decide if, taking into account the implementation of any mitigation measures the Minister considers appropriate, the project is likely to cause significant adverse environmental effects referred to in section 5. Should the Minister decide that a project is likely to result in significant adverse environmental effects, subsection 52(2) calls for referral to the Governor in Council for a decision on whether those effects are justified in the circumstances.

As per section 54 of CEAA 2012, the Minister must issue an EA decision statement to the proponent of a designated project. The decision statement includes the decision of whether significant adverse effects are likely to occur and any conditions, established under section 53 with which the proponent must comply.

4.0 Determination of Significance under CEAA 2012

Determining whether a project is likely to cause significant adverse environmental effects (often referred to as determination of significance) is central to the practice of project EA. The determination of significance includes considering whether the predicted environmental effects are adverse, significant and likely. A proponent, the Agency or a review panel may make a determination of significance in the course of a project EA. Such determinations of significance are separate from, but may inform, the decision made by the Minister under subsection 52(1) of CEAA 2012.

When a project is predicted to have adverse environmental effects, as defined in section 5 of CEAA 2012, the EA examines whether the project is likely to cause significant adverse environmental effects after taking into account the implementation of technically and economically feasible mitigation measures.

This OPS describes how the determination of significance is nested within the environmental assessment framework (EA framework) and explains the approach recommended by the Agency for reaching a determination on significance. Guidance is also provided on information requirements, documentation needed to support the determination of significance and on roles relative to decision-making.

Environmental Assessment Framework

Environmental effects are commonly identified by comparing the current state (health, status or condition) of a Valued Component (VC) to the predicted future state of the VC with the project in place. VCs are selected to focus the assessment of section 5 environmental effects, taking into account direction provided by the Agency, or in the case of an EA by review panel, by the Agency or the Minister.

The information collected and considered for each VC (including information from Aboriginal communities and the public) is processed through the EA framework. This iterative framework consists of the following steps: scoping, analysis, mitigation, significance, and follow-up (further described in [Appendix 1](#)).

The determination of whether a project is likely to cause significant adverse environmental effects (step 4 in the EA framework) relates to the residual adverse environmental effects. A residual adverse environmental effect is an adverse environmental effect of a project that remains, or is predicted to remain, after mitigation measures have been implemented.

Significance is determined for each residual adverse environmental effect using VCs to focus information gathering on each effect.

Proponents are expected to determine whether their project is likely to cause significant adverse environmental effects in their EIS with respect to the residual adverse environmental effects. This requirement is outlined in the EIS Guidelines issued by the Agency for each project EA.

Such determinations must be made for project-specific effects and for any cumulative environmental effects. Both of these determinations, documented in the EA report or panel report, are taken into account in the decision made by the Minister under section 52 of CEEA 2012.

The determinations must take into account uncertainties. All project EAs involve some level of uncertainty, and observed results will often deviate, to some degree, from predictions made in the EA. Uncertainty could be related to a number of factors such as: project design and components, baseline environmental conditions, VC response, effectiveness of mitigation, overall scope of effects, and natural and human causes of accidental events.

The level of effort applied to the determination of significance is established on a case-by-case basis using the same factors as the overall EA, i.e.:

- the characteristics of the project;
- the potential environmental effects;
- the state (health, status or condition) of VCs that may be impacted by the environmental effects;
- the potential for mitigation and the extent to which mitigation measures may address potential environmental effects; and,
- the level of analysis required to address issues raised by Aboriginal groups or the public.

5.0 Approach

This approach is nested within the significance step of the EA framework (see Appendix 1, step 4)

The recommended approach to determining if a designated project is likely to cause significant adverse environmental effects consists of three stages:

- Stage 1: Determining whether the residual environmental effects are **adverse**;
- Stage 2: Determining whether the residual adverse environmental effects are **significant**;
- Stage 3: Determining whether the significant adverse environmental effects are **likely**.

This approach is carried out for each potential environmental effect.

Stage 1: Adverse

Only residual environmental effects that are adverse are considered in the determination of significance under CEEA 2012. Identification of these effects is the result of the scoping, analysis and mitigation steps of the EA framework (steps 1-3 in [Appendix 1](#)). The identification

of residual adverse environmental effects applies to the full life cycle of the project: construction, operation, decommissioning and abandonment of the project.

An adverse environmental effect can be described in qualitative or quantitative terms. Examples of adverse environmental effects for generic VCs that may be linked to section 5 of CEEA 2012 are listed below.

Examples:

Loss of fish or fish habitat

Migratory bird mortality

Decline in the health, status, or condition of marine plants

Reductions in species diversity or abundance of marine animals

Reduction in air quality on federal lands or in another province during project operation

Loss of, or damage to, habitats, including habitat fragmentation that would affect the current use of lands and resources for traditional purposes by Aboriginal peoples

Negative impacts on human health, such as contamination of country food relied upon by Aboriginal peoples

Loss of, or damage to, physical and cultural heritage resources of Aboriginal peoples (e.g., changes to sites of cultural importance) during project construction

Loss of, or damage to, Aboriginal historical, archaeological, paleontological, or architectural resources

Stage 2: Significant

This stage involves considering if the residual adverse environmental effects identified in stage 1 are significant for each potentially affected VC.

Key criteria (further described in [Appendix 2](#)) that should be considered in this stage include:

- Magnitude;
- Geographic extent;
- Timing;
- Frequency;
- Duration; and
- Reversibility.

Other criteria may also be considered provided that they are described and a rationale for their use is documented. In the case of a proponent seeking to ensure proper documentation of such project-specific criteria, discussion with Agency staff is recommended.

The extent to which an individual criterion will influence the determination of significance will vary depending on the VC under consideration, the nature of the project and its potential environmental effects, as well as the context.

Example: A migratory bird may interact with the construction phase of a project during a short period of time every year and within a small portion of its habitat. If the interaction occurs during its breeding period and in its breeding habitat, it may be more harmful than an interaction occurring during other times of the year or in other parts of its habitat.

The ecological and social context within which potential environmental effects may occur should be taken into account when considering the key criteria above in relation to a particular VC, as the context may help better characterize whether adverse effects are significant. For example, information on the context is useful when it reveals:

- a unique characteristic of the area (e.g., proximity to park lands, ecologically critical or fragile areas, valuable heritage resources);
- unique values or customs of a community that influence the perception of an environmental effect (including cultural factors);
- a VC that is important to the functioning of an ecosystem, ecological community or community of people; or
- a VC for which a target has been established.

Activities over the life-cycle of the project should be considered. For example planned decommissioning activities may influence the criteria. As well, it is important to note that the environmental effects may extend beyond the period of physical interaction between the project activity and VC.

Stage 3: Likely

The determination of likelihood is based on consideration of probability and uncertainty, and is considered only when it is established through stage 2 that one or more predicted residual adverse effects are significant.

The probability of an environmental effect occurring may be based on knowledge and experience with similar past environmental effects. The full life cycle of a project, including its various stages and lifespan, should also be considered in determining the probability of occurrence of an effect.

6.0 Implementation Guidance

The following guidance is provided to assist in clarifying information requirements, documentation, and how the determination of significance informs decision-making.

Information requirements

The Agency issues EIS Guidelines to proponents specifying the nature, scope and extent of the information and analysis required for the preparation of the EIS. In an EA by review panel, the Minister determines the scope of the factors to be taken into account. The Agency, Minister or review panel may also issue information requests to a proponent seeking additional clarification, the collection of information, and the undertaking of studies, if necessary.

Community knowledge and Aboriginal traditional knowledge can contribute to the determination of significance. The public and Aboriginal groups can provide information, offer a different interpretation of the facts or question the conclusions put forward during an EA process.

EA practitioners should use qualitative or quantitative information in determining the confidence level associated with a prediction that supports the determination of significance, e.g. the range within which a predicted value lies within a stated degree of probability.

Documentation

Practitioners are expected to develop clear descriptions of what would be considered a significant adverse environmental effect on a VC. The determination of significance should be presented in a rational, defensible way, and the reasons for the determination should be clearly documented, including the following:

- A residual environmental effect should take into account the predicted effectiveness of proposed mitigation measures and any uncertainties associated with these measures.
- Practitioners should submit analysis of each of the key criteria presented in Appendix 2, as well as any other criteria used in the determination of significance. A rationale must be presented if a particular criterion is deemed not relevant.
- The analysis of likelihood of the significant adverse environmental effects should provide sufficient detail, to substantiate how conclusions were reached.
- The degree of scientific uncertainty related to the data and methods used within the framework of the environmental analysis should be described.

Decision-making: Roles and Responsibilities

The proponent is responsible for providing the necessary information to assess significance and to provide conclusions on determination of significance. This is done through the EIS, as well as subsequent responses to information requirements, where applicable.

The Agency or review panel examines the proponent's information and conclusions on determination of significance, as well as other perspectives on significance received during the EA process. The Agency or review panel then outlines its rationale and conclusions on determination of significance in the EA report or the panel report. These conclusions may align with, or may differ from, those presented by the proponent.

The EA report or panel report is considered by the Minister in making the decision under subsection 52 (1) of CEAA 2012.

Appendix 1: Environmental Assessment Framework

Step 1: Scoping

Identification of the initial focus of an environmental assessment including: the identification of VCs, potential environmental effects, and spatial and temporal boundaries; and the examination of other physical activities that may contribute to cumulative environmental effects.

Step 2: Analysis

Data collection or generation through means such as surveys, literature reviews, on-site testing, community knowledge and Aboriginal traditional knowledge, and a clear description of methods used to predict environmental effects.

Step 3: Mitigation

Identification of technically and economically feasible measures to mitigate any significant adverse effects by reduction, elimination or control or, when these forms of mitigation are not possible, restitution measures such as replacement, restoration or compensation.

Step 4: Significance

Development of conclusions about whether a project is likely to result in significant adverse effects, taking into account the implementation of any mitigation measures.

Step 5: Follow-up

Development of a program to verify the accuracy of the EA of a designated project and/or the effectiveness of mitigation measures.

Appendix 2: Key Criteria for Determination of Significance

As outlined in stage 2 of the approach for determining significance, in addition to the criteria outlined below, EA practitioners should also consider the ecological and social context within which the potential residual adverse environmental effect may occur, in determining significance.

Magnitude

Magnitude refers to the amount of change in a measurable parameter relative to baseline conditions or other standards, guidelines or objectives (e.g., proportion of species habitat affected, number of lost hunting days).

The magnitude of an environmental effect should be expressed in measureable or quantifiable terms, whenever possible. There may be multiple measureable parameters relevant to a VC. When using quantitative or qualitative descriptions of magnitude, clear definitions of terms should be provided. The definition of these terms may vary according to the VC under consideration. For example, if using categories such as “low”, “moderate” or “high” each category should be clearly defined, and the rationale for identifying an environmental effect as being a low, moderate or high magnitude should be clearly documented.

Some considerations that may influence the evaluation of the magnitude of an effect include:

- natural variability, normal fluctuations, or shifts in baseline conditions;
- scale at which magnitude is considered (for example, the percentage of a population affected may represent 80% at a local level and 5% at the regional level);
- resiliency of the VC and surrounding area to change (for example, considering whether especially vulnerable segments of the VC are affected); and
- whether the VC has already been adversely affected by other physical activities or natural change.

Geographic extent

Geographic extent refers to the spatial area over which the environmental effect is predicted to occur. Typical qualitative scales for characterizing geographic extent include site specific, local, regional, provincial, national or global. Prediction of the geographic extent should be quantitative whenever possible (e.g. hectares of habitat change). The traditional territories of potentially affected Aboriginal groups should be considered where relevant.

Depending on the VC, it may be important to take into account the extent to which adverse environmental effects caused by the project may occur in areas far removed from it (e.g. the long-range transportation of atmospheric pollutants).

Timing

Timing considerations should be noted when it is important in the evaluation of the environmental effect (e.g. when the environmental effect could occur during breeding season, or during a period of species migration through the area). It may also be relevant to discuss variation in timing of project activities, such as reservoir level fluctuations, and how that may cause varying environmental effects.

For non-biophysical environmental effects, it is important to take into account seasonal aspects of land and resource use and whether timing is related to Aboriginal spiritual and cultural considerations.

Frequency

Frequency describes how often the environmental effect occurs within a given time period (e.g., alteration of aquatic habitat will occur twice per year).

Frequency should be described using quantitative terms where possible, such as daily, weekly or number of times per year. It may also be described qualitatively as rare, sporadic, intermittent, continuous, or regular. If using qualitative terms, these should be defined for each VC.

Duration

Duration refers to the length of time that an environmental effect is discernible (e.g. day, month, year, decade, permanent). This can refer to the amount of time required for the VC to return to baseline conditions, through mitigation or natural recovery (e.g. vegetation re-colonization, return of wildlife to an area where habitat was avoided due to disturbance).

The duration of the environmental effect may be longer than the duration of the activity that caused the environmental effect. For example, the discharge of a substance into a water body may occur only during operation of a project, but the environmental effect to aquatic biota may last beyond the operational lifespan of the project. In this example, if the discharge is continuous throughout operation and results in reduced fish populations, then the frequency of the environmental effect is continuous and the duration spans operation and post-operation up to the point where fish populations return to baseline.

Environmental effects may not occur immediately following the activity causing them, but these effects still need to be considered. For example when a new reservoir is created there will be a delay before increases in methyl mercury concentrations occur in fish. Similarly, the effect on the intergenerational transfer of knowledge in an Aboriginal community may not be observed for many years after a project disrupts a specific traditional use of the land.

Reversibility

A reversible environmental effect is one where the VC is expected to recover from the environmental effects caused by the project. This would correspond to a return to baseline conditions or other target (e.g., a population management objective, remediation target), through mitigation or natural recovery within a reasonable timescale.

Reversibility is influenced by the resilience of the VC to imposed stresses and the degree of existing stress on that VC.