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## Coming into Force

**2 This Order comes into force on the day on which *Order 2016-87-04-01 Amending the Domestic Substances List* comes into force.**

[12-1-o]

## DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE

### *Estimating upstream GHG emissions*

This notice presents Environment and Climate Change Canada's (ECCC) proposed methodology for estimating the upstream greenhouse gas (GHG) emissions associated with major oil and gas projects undergoing federal environmental assessments. This proposed methodology will be adapted for oil and gas projects based on feedback received during the comment period.

Interested parties have a 30-day period, from the date of publication in the *Canada Gazette*, Part I, to comment on the proposed approach. Comments may be provided to Mark Cauchi, Executive Director, Oil, Gas and Alternate Energy Division, Environment and Climate Change Canada, 351 Saint-Joseph Boulevard, Gatineau, Quebec K1A 0H3, 819-420-7410 (fax), ec.dpger-ogaed.ec@canada.ca (email).

### Methodology

Environment and Climate Change Canada (ECCC) has developed a methodology to assess the upstream greenhouse gas (GHG) emissions from projects under review. The Department intends to use this methodology to fulfill its responsibilities to conduct these assessments as announced by the Government on January 27, 2016.

### Defining "upstream"

"Upstream" includes all industrial activities from the point of resource extraction to the project under review. The specific processes included as upstream activities will vary by resource and project type, but in general they include extraction, processing, handling and transportation.

As an illustrative example, a crude oil pipeline project may include the following upstream activities:

- Extraction — crude oil and gas wells and oil sands mining and *in situ* facilities;
- Processing — field processing and upgrading, if occurring;
- Handling — product transfer at terminals; and
- Transportation — any pipeline operation in advance of the project.

### Overview of the approach

The assessment of upstream GHGs will consist of two parts: (A) a quantitative estimation of the GHG emissions released as a result of upstream production associated with the project, and (B) a discussion of the project's potential impact on Canadian and global GHG emissions.

The quantitative GHG estimation, (A), will focus on emissions from the upstream activities exclusively linked to the project, including those associated with the production of steam or hydrogen used by upstream facilities. This will include sources such as combustion and fugitive, venting and flaring emissions. The quantitative estimate will not include estimates of indirect emissions, such as those associated with the manufacture of equipment, land-use changes, grid electricity and fuels that are produced elsewhere, unless they are otherwise not distinguishable from the upstream emissions.

When possible, the emission factors and estimates developed will be validated against estimates developed using other emission and production projections available. For example, for the upstream analysis performed for the Pacific Northwest LNG project, ECCC also estimated emissions using the B.C. Shale Scenario Tool of the Pembina Institute and the LNG Greenhouse Gas Life Cycle Analysis Report of the Government of British Columbia. Appropriate data sources will be determined on a sector-by-sector, or, where appropriate, project-by-project, basis and could include information from any number of industrial, academic or other sources.

The discussion part, (B), will assess the conditions under which the Canadian upstream emissions estimated in Part A could be expected to occur even if the project were not built. This will include an assessment of future Canadian resource production forecasts given various price scenarios, potential alternative markets and modes of transportation, their costs, and other Canadian and global market conditions. The discussion will also explore the potential impact of GHG emissions associated with the project on overall Canadian GHG emissions, and where possible, on global GHG emissions.

#### Data

The transparency of data is a key consideration. When available and applicable, publicly available data provided by the project proponent will be used, including details on project throughput, information on product sources, and market data. Other publicly available data and forecasts, such as ECCC's "Canada's Emissions Trends" publications and *Canada's Biennial Report on Climate Change* and the National Energy Board's *Canada's Energy Future*, may also be used.

#### Part A: Methodology for estimating upstream GHG emissions

The first step is to determine the expected throughput, and distinct components, of product for the project. This will be determined using publicly available proponent information or forecasts. The components considered may include, among others, conventional light oil, *in situ* heavy oils, mined heavy oil, synthetic crude oil, sweet gas, or acid gas. The throughput of a component may be adjusted to reflect the parameters of a particular project. For example, diluent, which is used to dilute heavy oil to facilitate its transportation by pipeline, is sometimes recycled; in such a case, the upstream emissions associated with the production and processing of the diluent would be different from when the diluent is not recycled. Each component of the product would be distinct in the extraction, processing, handling and transportation activities it has undergone before reaching the project, and the components' emissions factors will reflect these differences.

The second step is to determine the GHG emission factor for each component of the product. Emission factors will be determined using data in ECCC's published emissions data and other publicly available data, as appropriate. Emissions factors are calculated by dividing the annual GHG emissions resulting from the upstream activities a component experiences (e.g. extraction, processing, handling and transportation) by the annual production of that component.

The third step is to calculate the upstream GHG emission contribution from each component of the value chain. The component's throughput is multiplied by its emission factor to calculate the component's upstream emission contribution.

The last step is to determine the upstream GHG emissions associated with the project. This will be done by summing the calculated GHG emissions from each component of the product.

The variability and uncertainty of distinct components of the products that are associated with the project over time will translate into variability in the upstream GHG estimates. Several scenarios, representing various component throughputs, will be developed using the steps outlined above. For this reason, the upstream GHG estimates will be provided as a range. The sources of variability contributing to this range will be discussed.

Where forecast data is available, the four steps outlined above will be taken and the results presented for each year. This will allow the emissions forecast to reflect changes to the product volume, the mix of components, or the emission factors over time.

For an oil pipeline the methodology can be summarized mathematically as follows:

$$\text{Upstream Emissions} = \sum_i^n \left[ \left( \frac{GHG_i}{PROD_i} \right) (PROD_{proj,i} + f(adj)_{proj,i}) \right]$$

Where

$i$  is the distinct component of the product

$n$  is the total number of components in the product

$GHG_i$  is the annual emission from reference source resulting from the extraction and processing of component type,  $i$ , and includes emissions of carbon dioxide, methane, and nitrous oxide

$PROD_i$  is the annual production from reference source of component type,  $i$ , expressed as throughput (barrels per day)

$PROD_{proj,i}$  is the throughput of component,  $i$

$f(adj)_{proj,i}$  is the adjustment made to the component,  $i$ , throughput to reflect only throughput of component,  $i$ , that results in upstream GHG emission

#### Part B: Discussion of the impacts on Canadian and global upstream GHG emissions

The second part of the analysis discusses the conditions under which the Canadian upstream emissions estimated in Part A could be expected to occur even if the project were not built. This discussion draws on technical and economic information to assess the likely feasibility of Canadian resource production given various price scenarios, potential alternative markets and modes

of transportation, their costs, and other Canadian and global market conditions.

The approach that ECCC expects to employ in the interim analyses is outlined below for illustrative purposes. Proponents may wish to supplement the assessment with additional analysis.

As a first step, ECCC plans to examine current production levels and the expected growth of resource production in Canada as well as the potential markets for future resource production growth with and without the proposed project.

The second step involves evaluating the technical and economic potential for alternative modes of transportation to be used in the absence of the proposed project. This section could include scenarios with different assumptions on the construction of other proposed projects, where applicable.

The third step considers the alternative transportation modes and markets developed in the second step, and discusses the potential implications for Canadian and global upstream GHG emissions. This step would include an analysis of the financial considerations for upstream production, and a discussion of the conditions under which the proposed project could enable upstream emissions in Canada and, where possible, outside of Canada.

As an example, when considering whether Canadian GHG emissions would increase as a result of a crude oil pipeline project, the primary factor will be the potential increase in Canadian upstream oil production that would be expected to occur if the project were not built. In considering the impacts on global upstream GHGs, the primary factor will be the difference in upstream emissions intensity between Canadian and non-Canadian crude oil sources.

March 19, 2016

MARK CAUCHI  
Executive Director  
Oil, Gas and Alternate Energy Division

[12-1-o]

## DEPARTMENT OF THE ENVIRONMENT DEPARTMENT OF HEALTH

### CANADIAN ENVIRONMENTAL PROTECTION ACT, 1999

*Publication after screening assessment of a living organism — Aspergillus oryzae (A. oryzae) strain ATCC (see footnote 2), 11866 — specified on the Domestic Substances List (subsection 77(1) of the Canadian Environmental Protection Act, 1999)*

Whereas *A. oryzae* strain ATCC 11866 is a living organism on the *Domestic Substances List* identified under subsection 105(1) of the *Canadian Environmental Protection Act, 1999*;

Whereas a summary of the draft Screening Assessment conducted on this living organism pursuant to paragraph 74(b) of the Act is annexed hereby;

Whereas it is proposed to conclude that this living organism does not meet any of the criteria set out in section 64 of the Act;

And whereas the Minister of the Environment is considering amending the *Domestic Substances List*, under subsection 112(3) of the Act, to indicate that the significant new activities provisions under subsection 106(3) thereof applies with respect to this living organism,

Notice therefore is hereby given that the Minister of the Environment and the Minister of Health (the ministers) propose to take no further action on this living organism at this time under section 77 of the Act.

#### Public comment period

As specified under subsection 77(5) of the *Canadian Environmental Protection Act, 1999*, any person may, within 60 days after publication of this notice, file with the Minister of the Environment written comments on the measure the ministers propose to take and on the scientific considerations on the basis of which the measure is proposed. More information regarding the scientific considerations may be obtained from the Government of Canada's Chemical Substances Web site ([www.chemicalsubstances.gc.ca](http://www.chemicalsubstances.gc.ca)). All comments must cite the *Canada Gazette*, Part I, and the date of publication of this notice and be sent to the Executive Director, Program Development and Engagement Division, Environment Canada, Gatineau, Quebec K1A 0H3, 819-938-5212 (fax), [eccc.substances.eccc@canada.ca](mailto:eccc.substances.eccc@canada.ca) (email).

In accordance with section 313 of the *Canadian Environmental Protection Act, 1999*, any person who provides information in response to this notice may submit with the information a request that it be treated as confidential.