

Incremental Ethane Extraction Program Guidelines

Revised July 16, 2010

Alberta Department of Energy
Value-Added Development Branch

Introduction

The petrochemical industry in Alberta is currently based on adding value to natural gas liquid (NGL) feedstocks, mainly ethane with some manufacturing based on propane and butane. Forecasts indicate that the supply of NGL feedstocks will likely decline in the near future due to the decline of conventional gas production from the Western Canadian Sedimentary Basin and as new gas sources from the basin become drier – containing little or no NGLs. In order to preserve and/or expand Alberta's petrochemical industry, new supplies of secure, cost competitive ethane will be required. Significant re-investment in supply infrastructure in Alberta may be required to take advantage of the potential petrochemical growth opportunities.

The petrochemical industry in Alberta is a value-adding industry that results in many benefits for Albertans. Alberta is Canada's largest petrochemical producing area, with annual shipments (including chemicals) of almost \$15 billion and exports of more than \$7 billion in 2006. The major markets are the United States and Asia. It is in the mutual interest of the government and industry to have a policy framework that maximizes the value of Alberta's energy resources, including value-adding opportunities for ethane and petrochemicals in Alberta.

In September 2006, the Minister of Energy (Minister) released the Government's Incremental Ethane Extraction Policy (IEEP) after several months of consultation with industry representatives from various petrochemical, midstream, pipeline, and natural gas industries. The IEEP is a key component in the on-going development of an energy value-added strategy for Alberta and its intended purpose is to:

- encourage value-added upgrading in Alberta;
- address the tight supply of ethane in Alberta and fill existing petrochemical capacity;
- encourage new investment in ethane extraction facilities (upgrades to existing plants, new plants, and off-gas processing);
- attract new investment in petrochemical derivative plants; and,
- enhance the Alberta Hub concept to attract future supplies of northern gas.

This program provides Fractionation Credits to the petrochemical companies that consume incremental ethane for value-added upgrading (e.g. production of higher valued products, such as ethylene and derivatives) and its objective is to sustain and grow the petrochemical industry in Alberta. The program is not company, project nor project type specific. The program provides opportunities for all NGL producers to participate in the program through partnerships with the petrochemical industry. Ethane that is used for other purposes, such as, export, for its heating content, or in Enhanced Oil Recovery (EOR) schemes are not eligible for fractionation credits.

These guidelines are intended to be the operational document in support of the Incremental Ethane Extraction Regulation approved July 2007 and the amendment to remove the program cap in September 2009.

Definitions

For the purpose of this program the following are common terms and their meanings:

Company or companies: a company that has an ownership interest in a petrochemical facility.

Consumption (or Consumed): means the use of ethane as feedstock in the manufacture of value-added petrochemical products at a Facility.

Cubic Metre of Ethane: means the volume of pure liquid ethane that at 15 degrees centigrade and equilibrium vapour pressure fills a space of one cubic metre.

Ethane Consumption Baseline (ECB): means the baseline forecast as established by the Minister that is used to measure incremental ethane consumption.

Facility: means a petrochemical facility located in Alberta that uses ethane as feedstock to manufacture petrochemical products

Fractionation Credits: means fractionation credits calculated and established by the Minister.

Incremental Ethane Consumption: means industry-wide consumption of ethane from a new, eligible source exceeding the ECB.

In-service date: the first date a project can be deemed to have commenced full operation.

Unit Fractionation Credit: means a dollar amount per cubic meter of ethane (but which may also be expressed in dollars per barrel of ethane) established by the Minister, by order, for each year.

Year: calendar year.

Eligibility

Fractionation Credits under this program are earned by companies based on the amount of actual, eligible ethane they consume above the Ethane Consumption Baseline (ECB). For a Company to qualify for Fractionation Credits it must be a company that is or will be an owner in a Facility located in Alberta that manufactures ethylene using eligible ethane as a feedstock.

Eligible ethane must be incremental ethane from a new supply source as of April 1, 2007; examples of eligible ethane sources may include: increased extraction capacity at existing gas processing plants, new extraction capacity and off-gases from oil sands upgraders.

Although the regulation in compliance with most legislation uses metric measurements and states “ethane as measured in cubic metres”, for the purposes of this program and in keeping with the common industry practice in Alberta, applications and reporting under this program will be in barrels (where one cubic metre of ethane is equal to 6.28981 barrels¹). For upgrader off-gases,

¹ * In accordance with Alberta Ethane Gathering System Ethane Specifications and Operating Guidelines Issue #4.

and in the absence of an operating facility at this time, the ethane/ethylene mixture may be considered eligible and will be measured as an ethane-equivalent.

During the period of April 1, 2007 to December 31, 2011, all ethane consumed above the ECB may be eligible for Fractionation Credits. After January 1, 2012, only ethane consumption related to “tagged” sources (specific projects tagged on or before December 31, 2011) as identified in an advanced ruling process may be eligible for Fractionation Credits until December 31, 2016.

Incremental consumption from tagged projects will be eligible for credits for the first five years from when the project begins producing ethane. The blue cells in the table below illustrate ethane consumption in different years that are eligible for credits.

Incremental Ethane Fractionation Credit Eligibility Table - Illustration

		Eligible for Credits - Year									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ethane Consumption Start Date	2007	Blue	Blue	Blue	Blue	Blue					
	2008		Blue	Blue	Blue	Blue	Blue				
	2009			Blue	Blue	Blue	Blue	Blue			
	2010				Blue	Blue	Blue	Blue	Blue		
	2011					Blue	Blue	Blue	Blue	Blue	
	2012						Blue	Blue	Blue	Blue	Blue
	*2013							Blue	Blue	Blue	Blue
	*2014								Blue	Blue	Blue

* Projects were “tagged” before December 31, 2011 but in-service date occurred after December 31, 2011. Note: projects in-service after 2014 will not meet the three year in-service criteria described in the Application section.

For tagged projects producing after December 31, 2011, eligible credits earned will be based upon the lesser of the project’s maximum continuous rating (design capacity) or the actual ethane consumed. A Company can request an adjustment to the amount of credits issued (e.g. adjust the ECB lower) with appropriate explanation. However, adjustments will only be made to reflect factors outside of the petrochemical industry’s control as described in the next section.

Ethane Consumption Baseline

The Minister has established an industry-wide ECB, see Appendix A. The ECB is intended to represent the amount of ethane consumption by the petrochemical industry under expected ethane supply and infrastructure utilization (i.e. “do nothing” case) and forms the foundation for measuring annual incremental ethane consumption. The ECB and forecast is intended to provide some certainty and clarity to the petrochemical industry in making the long-term investments and/or financially backstopping new ethane extraction infrastructure with partners at the time applications are made.

An independent consultant has worked with the Department to develop the ethane supply and demand forecasts, including discussions with the petrochemical companies and other stakeholders. The Minister has determined that the start point for the ECB will be the estimated three-year average historical industry-wide ethane consumption by the petrochemical industry.

The ECB was adjusted in 2010 to reflect declines in ethane supply. A number of factors have been considered in establishing the forecast including expected natural gas drilling and respective gas composition by region.

In future years the Minister will have discretion to adjust the ECB for unexpected events not reflected by the forecast. Any revisions to the ECB will be posted to the Department's website. Two types of adjustments can occur:

- (i) Downward Annual Adjustments: these adjustments may be made by the Department at the end of the year based on actual consumption data and information submitted by the petrochemical industry in the Annual Eligibility Application (see "Application Process" section), or by industry stakeholders. The annual adjustments will only apply to the baseline for that year and will not change the forecast for future years.
- (ii) Revised Baseline Forecast: the Department will review the forecast as compared to actual data and may establish a new ECB forecast based on significant, material changes to either petrochemical demand (e.g. new ethylene facilities or closure of facilities) or ethane supply and may acquire independent services to assist in its determination. The revised forecast will be applicable to all subsequent new projects or untagged ethane consumption. Ethane consumption for existing/tagged projects would still be evaluated on the ECB in effect when tagged.

Calculation of Credits

The value of the Unit Fractionation Credits is a fixed dollar per unit of ethane or "Fractionation Price" as prescribed by the Minister (i.e. the size of the credit will not vary for different projects in the same year). The Unit Fractionation Credit value at the start of the program has been set at \$1.80 per barrel. The Minister will announce the value prior to February 1 each year thereafter.

The Unit Fractionation Credit is intended to reflect a portion of the higher costs of new sources of ethane within Alberta and may be adjusted due to changing economic circumstances during the term of this program. Tagged projects will receive the higher of the Unit Fractionation Credit in effect at the time it was approved or the current Unit Fractionation Credit.

Total Fractionation Credits available for this program are \$35 million per year, the approximate annual value of royalties collected on ethane extracted in Alberta. Unused credits accrue to the following year for a total program cap of \$350 million over ten years. This feature recognizes the timeframes required to bring new projects from application through to in-service date when credits first apply.

Application Process

The Company must submit a written application to the Minister in the form of a letter containing details described below and clearly identify which type of application is being made. The application may be one of two types: (1) Advanced Ruling Application (ARA) or (2) Annual Eligibility Application (AEA).

(1) - ARA:

This type of application allows the Company to identify specific ethane producing facilities (projects) and request they be “tagged”. The Minister will review the ARA and indicate if the ethane consumption and associated new ethane supply project appear to be eligible for Fractionation Credits and if funding is available. This application process is intended to provide some certainty to the Companies that their proposed incremental ethane consumption (and associated ethane production facilities) may be eligible for Fractionation Credits and at a Unit Fractionation Credit value no lower than that which was in effect at the time of application.

Projects that are subject to regulatory approval will still undergo any necessary regulatory and permit applications required by the applicable regulatory authority. Approval of the ARA is not a guarantee of a facility approval.

Each year in the first five years of the program, the Department will hold an application season, typically two months, for the Companies to submit their ARAs. The first application season will begin December 15, 2007 and end February 28, 2008. In subsequent years the application season will be held annually from April 1 to May 31 (note: an application season was not held in 2009 due to difficulties in the global economy). There will be no further application seasons or tagging after December 31, 2011.

The ARA must be submitted by a Company and include the following two main sections:

(1) Project Identification:

The applicant will identify a new source of ethane (“project”) and corresponding incremental ethane consumption. The following specific details about the project must be included in the ARA:

- general description;
- design and operating capacity;
- estimated in-service date;
- the Company’s estimated incremental ethane consumption and associated value-added production; and,
- project owner.

Specific ARA projects approved by the Minister will be tagged and eligible for Fractionation Credits for the first five years following the in-service date under the following conditions:

- the applicant consumes incremental ethane produced by an approved ARA project; and,
- the project is in-service within 3 years of the application.

(2) Business Case:

The ARA must also include a detailed business case to justify the need and support for the Fractionation Credits for the project. The business case should include:

- reasons/need for the credit (likely with an alignment to the source and increased cost of the incremental ethane);
- benefits to Albertans - government, public, other (e.g. tax revenue, royalty revenue, skilled jobs, developing new markets, etc.);
- identifies any potential negative impacts on existing infrastructure and markets;

- forecasts incremental ethane consumption and associated production, and identifies external factors that could influence results; and,
- illustrates to the Minister that the incremental ethane consumption is providing long-term benefits that outweigh the costs of the credit to the Crown.

The Department will review each application for completeness.

ARAs received during the application season will be posted as they are received on the Department's website. This information will be updated at the end of the application season to show approved tagged projects. Information shown will be the posted date, Company, project description, ethane design capacity and in-service date. Once the information is posted on the Department of Energy's website, potentially affected stakeholders will have 10 working days to submit written concerns about the project to the Department.

(2) - AEA:

An AEA must be submitted by each Company annually prior to March 1 to report their consumption in the prior calendar year. The AEA must include:

- actual ethane consumption by their facilities;
- sources, amounts produced, and actual in-service dates of tagged ethane;
- evidence of ethane consumption and value-added production including but not limited to invoices, meter readings, senior management affidavit or other auditable documents; and,
- any evidence to justify an adjustment to the ethane consumption baseline (if requested).

If the application includes a request for credits for incremental volumes pertaining to untagged ethane, the AEA must include reasons/justification for issuing credits and a business case that supports government participation.

The individual ARA and annual AEA submissions are to be addressed to:

Branch Head
Value-Added Development
Alberta Department of Energy
9945 - 108 Street
Edmonton, Alberta T5K 2G6

Issuance of Fractionation Credits

The Department will issue Fractionation Credits to Companies by June 1 of each year. The total Fractionation Credits available to be allocated will be equal to the volume of industry wide eligible ethane consumption above the ECB in effect for that year, times the applicable Unit Fractionation Credit value.

The Fractionation Credits will be established by multiplying the allocated eligible ethane consumption volumes by the Unit Fractionation Credit value. The volume of eligible ethane shall be:

- For years 2007 to 2011 – the total amount of eligible ethane (tagged and non-tagged sources) consumed above the industry wide baseline,

- For years 2012 to 2016 – the total amount of eligible ethane from tagged sources only consumed above the industry wide baseline.

The amount of credits allocated to individual Companies may be pro-rated in a given year. For example, if for a given year the numerical difference between the total AEA reported volume and the ECB volume is less than the sum of all approved ARA volumes, then the total amount of credits available will be less than the sum of eligible ethane consumed by the Companies. In this situation, the Department will prorate the amount of eligible ethane (industry consumption above the ECB) to the Companies based on the ethane consumed from their respective tagged projects.

The aggregate value of Fractionation Credits issued for each year will be posted on the Department's website in the following June.

Illustrative Example of Prorated Fractionation Credits:

Assume that the Unit Fractionation Value = \$1.80 per barrel, ECB is 200 thousand barrels per day (kbpd), and AEAs report volumes of 250 kbpd.

Total value of credits will be:

$$\$1.80/\text{bbl} \times (250-200) \text{ kbpd} \times 365 \text{ days} = \$32,850,000$$

The \$32,850,000 will then be allocated to the ARAs on the basis of actual consumption or capacity (whichever is lower) from the tagged projects.

If Company A purchases 20 kbpd and Company B purchases 40 kbpd from tagged projects for consumption in Alberta, then credits would be allocated as follows:

$$\text{Company A} = 20 \text{ kbpd}/60 \text{ kbpd} \times \$32,850,000 = \$10,950,000$$

$$\text{Company B} = 40 \text{ kbpd}/60 \text{ kbpd} \times \$32,850,000 = \$21,900,000$$

Using Fractionation Credits

Fractionation Credits are used only by way of a reduction to royalties' payable on natural gas and natural gas by-products under the *Natural Gas Royalty Regulations 2002* and must be used by the end of the year in which they are issued. If the Company that receives fractionation credits is not a gas royalty client of the Department, the credits may be transferred in whole or in part to one or more royalty clients. The types of commercial arrangements between industry participants to transfer the credits will not be restricted by the government.

A Company must identify in its annual application the royalty clients and the percentage of the credits to be allocated to each of those royalty clients for that year. In the event these allocations need to be amended, the Company may advise the Department by letter until such time as the credits have been applied by the Department to the royalty client accounts.

Royalty clients eligible to use Fractionation Credits will see the deduction as a line item on their royalty invoice under the Other Financial Transactions portion of the invoice.

Record Keeping

For the purposes of the regulation, Companies are required to retain documents related to the consumption of ethane for the duration of this program and five years after the issuance of the last annual Fractionation Credits under this regulation.

The Minister may request that the Department's Auditors have access to all documents including production reports, ethane purchases and commercial agreements from time to time.

Limitations

Companies may not retroactively amend applications for Fractionation Credits after the credits have been issued unless granted specific authority of the Minister.

The Minister may refuse to grant credits under the IEEP to a person/company if the Minister believes that the regulations have been contravened, or that business arrangements were made that artificially affected the determination of the credits. Also, the Minister may cancel and/or reduce accordingly the value of any credits approved under such circumstances.

If credits were allocated and redeemed, and the Minister subsequently determines that all or parts of the incremental consumption submitted is ineligible, the Company will be required to repay the Fractionation Credits, including compound interest (Alberta Treasury Branch prime rate plus 1%).

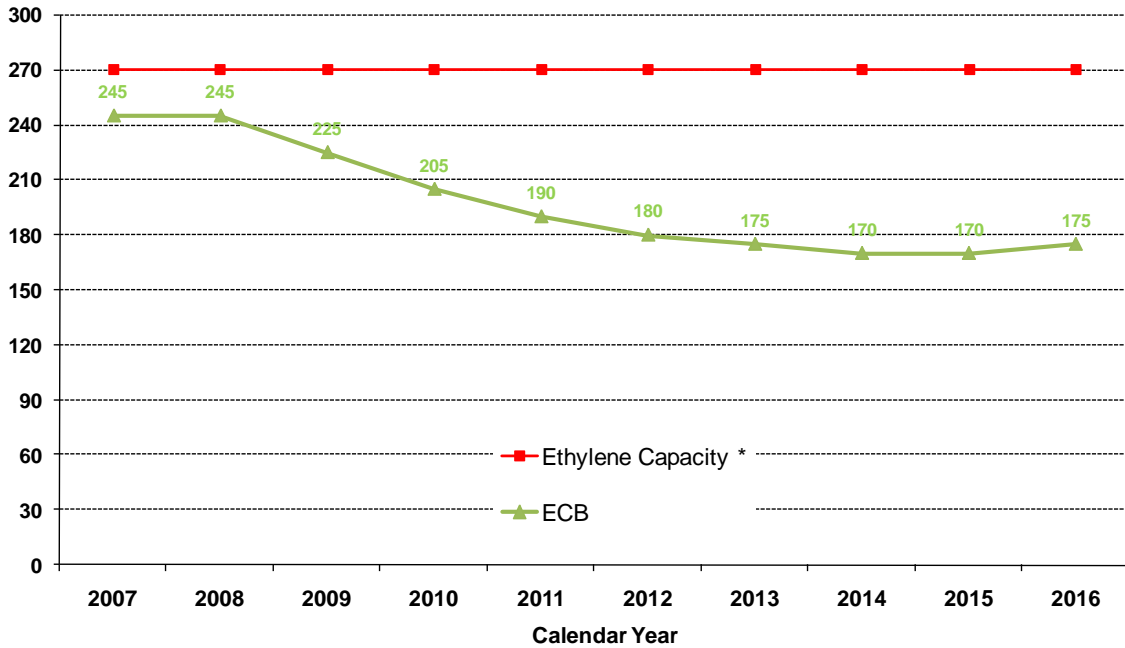
Contact

For further information please contact:

Alberta Department of Energy
Value-Added Development Branch
9945 - 108 Street Edmonton, Alberta T5K 2G6

Appendix A - Ethane Consumption Baseline

Ethane Consumption Baseline (thousands of barrels per day)



*Nameplate Capacity of Alberta's Four Ethane Crackers