

Report to Legislative Assembly of Alberta

Incremental Ethane Extraction Program (IEEP)
2011 Extension and Amendments
And
Industry Consultation

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Executive Summary

Issue:

On Monday, October 24, a number of allegations were raised during the Question Period segment of the fourth session of the 27th Legislature. These allegations were that:

1. Two energy companies knew of policy changes to the Incremental Ethane Extraction Program (IEEP) before it was approved by government.
2. Having a former industry executive involved in the redesign of IEEP was a conflict of interest as it conferred an unfair advantage to the former employer.
3. Two energy companies had a head start and an unfair advantage in applying for government money under IEEP.
4. There is no more funding available under IEEP.

In response, Premier Redford asked the Minister of Energy to conduct an investigation and provide public disclosure of the facts related to these concerns.

Background:

In September 2006, the IEEP was established, with an approved budget of C\$350 million, after several months of consultation with industry representatives from various petrochemical, midstream, pipeline, and natural gas industries.

The IEEP is an incentive program that provides credits to petrochemical companies that consume incremental ethane and ethylene for value-added upgrading (e.g., production of higher valued products, such as ethylene, polyethylene and other derivatives). The program's objective is to sustain and grow the petrochemical industry in Alberta. Under this program, the Crown forgoes a share of royalty collected on natural gas liquids (NGL) to encourage their upgrading to higher-value petrochemical products such as ethylene and derivatives.

Approved projects receive a royalty Credit for the actual amount of eligible ethane they consume, up to the approved amount of the project proposal. If a project produces less ethane than anticipated in the original application, credits are only provided for the incremental barrels actually consumed. Projects receive credits for 60 consecutive months from the start of their operation. After the 60 months, credits can no longer be collected.

The program is accessible to all Alberta based companies that consume ethane or ethylene for value-added upgrading. All major petrochemical companies operating in Alberta, including Shell Chemicals Canada, DOW Canada and NOVA Chemicals Ltd, have applied for and been approved for Credits under the program.

In spring, 2010, the Government of Alberta passed the *Alberta Competitiveness Act* and established the Alberta Competitiveness Council. The Alberta Competitiveness Council was co-chaired by Premier Ed Stelmach and Bob Brawn, Chair of the Alberta Economic Development Authority. Under this initiative, the petrochemicals/chemicals sector was identified as one of particular importance to the province's

economy and a specific *Petrochemicals Task Team* was established to focus on petrochemical issues related to competitiveness. A Task Team, co-chaired by Mr. Ray Prins, MLA for Lacombe-Ponoka and Mr. Val Mirosh, former Vice President of NOVA Chemicals and Board Member of the Alberta Economic Development Authority was formed and charged with developing practical strategies to improve the competitiveness of the sector.

In September 2010, and as part of the *Petrochemicals/Chemicals Task Team* process, Alberta Energy undertook a review of its IEEP to determine why the program was undersubscribed. On November 26, 2010, approximately 15 companies from the upstream, midstream and downstream energy industry were asked to participate in a workshop to review the IEEP as currently configured, and to discuss options for moving off-gas capture forward.

After extensive consultation with industry and a detailed internal review within the Department of Energy, a proposal to amend IEEP was developed to address administrative inefficiencies and to deliver a higher credit for off-gas ethane. This higher credit was considered necessary to recognize the additional capital cost required to produce off-gas ethane and to incent a program which reduces emissions. It also recognized that off-gas capture could reduce emissions by up to one million tonnes of emissions annually, equal to about 10 per cent of Alberta's current reduction obligation under the *Specified Gas Emitters Regulation*. Using off-gases in value-added production contributes to a reduced environmental intensity of Alberta's oil sands operations.

The IEEP program regulation was amended on March 23, 2011 by an Order in Council. On March 28, 2011, NOVA and Williams Energy Canada Inc. announced their intention to proceed with the previously approved Williams off-gas extraction project, which, when complete, will deliver an additional 10,000 barrels per day of off-gas ethane for value-added upgrading.

No additional funding was allocated to the program as a result of the changes made on March 23, 2011. Of the original C\$350 million allocated in 2006 to the IEEP, approximately C\$200 million remains unallocated today. To date, the IEEP has facilitated the production of almost 26,000 barrels per day of incremental ethane for value adding by Alberta's petrochemicals sector.

It is common practice within government to conduct in depth consultations with industry when developing a program intended to incent industry to undertake specific types of projects that are aligned with government policy objectives. The industry consultation for these specific program changes was conducted in a very open and transparent manner.

Key Findings

Claim 1:	Two energy companies knew of policy changes to the Incremental Ethane Extraction Program (IEEP) before it was approved by government.
Findings:	<ul style="list-style-type: none"> • All companies participating in the IEEP review were aware of recommended policy changes including the introduction of a separate higher credit for off gas ethane. • Alberta Energy officials presented recommended IEEP policy changes, including the proposed value of a separate credit for off-gas ethane, to industry on March 8, 2011. • A March 17, 2011 request by a public relations firm on behalf of one of the energy companies for a news release quote from the Energy Minister was in anticipation that recommended policy changes to IEEP would be approved. • The news release was stamped “draft” and was labeled “for discussion purposes only”, recognizing that the program changes had not been approved by Cabinet. A quote was provided on March 21, 2011.
Claim 2:	Having a former industry executive involved in the redesign of IEEP was a conflict of interest as it conferred an unfair advantage to the former employer.
Findings:	<ul style="list-style-type: none"> • With more than 30 years experience across the energy sector, as a professional lawyer, engineer and as a Board Member of the Alberta Economic Development Authority, Val Mirosh is uniquely qualified to co-lead the Petrochemical/Chemicals Task Team. • Mr. Mirosh is a former vice-president of NOVA and is currently an independent consultant.
Claim 3:	Two energy companies had a head start and an unfair advantage in applying for government money under IEEP.
Findings:	<ul style="list-style-type: none"> • Six projects have been supported under IEEP. • All three Alberta petrochemicals companies upgrading ethane/ethylene have applied for and received IEEP funding. • NOVA Chemicals submitted an application for IEEP Credits for the Williams Off-gas Extraction Project on June 15, 2010. • On September 20, 2010, Alberta Energy advised NOVA Chemicals Corporation that the Williams off-gas extraction application had been approved. • Alberta Energy initiated discussion on potential changes to IEEP including a separate credit for off-gas ethane to industry on November 26, 2010. • Alberta Energy officials presented recommended IEEP policy changes including the proposed value of a separate credit for off-gas ethane to industry on March 8, 2011.
Claim 4:	There is no more funding is available under IEEP.
Findings:	<ul style="list-style-type: none"> • Approximately C\$200 million remain in IEEP.

Incremental Ethane Extraction Program (IEEP) Background and Consultation process overview

Presenting Concerns:

On Monday, October 24, a number of allegations were raised during the Question Period segment of the fourth session of the October 27th Legislature. These allegations were that:

1. Two energy companies knew of policy changes to the IEEP before it was approved by government.
2. Having a former industry executive involved in the redesign of IEEP was a conflict of interest as it conferred an unfair advantage to the former employer.
3. Two energy companies had a head start and an unfair advantage in applying for government money under IEEP.
4. There is no more funding available under IEEP.

Concerns of impropriety were further raised by the Alberta Liberals in a news release issued on October 24, 2011 and in several media stories.

In response, Premier Redford asked the Minister of Energy to conduct a full review and provide public disclosure of the facts related to these concerns.

The following report contains an overview of the process followed by Alberta Energy to evaluate and amend the IEEP.

Program Overview:

In September 2006, the Minister of Energy (Minister) released the Government's 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); and,
- attract new investment in petrochemical derivative plants.

This program provides Fractionation Credits to the petrochemical companies that consume incremental ethane and ethylene for value-added upgrading (e.g. production of higher valued products, such as ethylene, polyethylene and other 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 and oil sands refiners and upgraders 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.

Industry Consultation

In spring, 2010, the Government of Alberta passed Bill 1, the *Alberta Competitiveness Act* and established the Alberta Competitiveness Council. The Competitiveness sought to better coordinate the efforts of government and business to ensure Alberta remains one of the most competitive jurisdictions in the world. The Alberta Competitiveness Council was co-chaired by Premier Ed Stelmach and Bob Brawn, Chair of the Alberta Economic Development Authority.

Under this initiative, the chemicals and petrochemicals sector was identified as one of four sectors of particular importance to the province's economy. A Task Team, co-chaired by Mr. Ray Prins, MLA for Lacombe-Ponoka and Mr. Val Mirosch, former Vice President of NOVA Chemicals and Board Member of the Alberta Economic Development Authority was formed and charged with developing practical strategies to improve the competitiveness of the sector.

Coinciding with the development of the Task Team and the passing of Bill 1, *The Alberta Competitiveness Act*, in June 2010, the Minister of Energy hosted a symposium in Calgary with key industry stakeholders to discuss the use of upgrader off-gases as feedstock for the petrochemicals industry. An outcome of this was a recommendation that an off-gas working group be reached to complement the work of the Task Team and help achieve the government's broader value-added objectives.

After analyzing the sector in the context of the whole Alberta economy, and benchmarking industry competitiveness to date, the Task Team identified the lack of ethane feedstock supply as being a critical factor impacting the sustainability and future growth of Alberta's petrochemicals sector.

During industry consultations, the Task Team heard significant support for sourcing non-conventional NGLs (particularly ethane) from off-gas capture. As part of this consultation process, on November 26, 2010 Alberta Energy held a workshop for companies from the upstream, midstream and downstream energy industry to review the IEEP as currently configured and to discuss options for moving off-gas capture forward. Recognizing the significant additional capital cost required to produce off-gas ethane, a higher fractionation credit for this product was debated. More than 15 companies and two industry associations participated in this nine month consultation process.

On March 8, 2010, the Task Team hosted a meeting with the energy industry to report back on industry feedback provided to the Premier's Competitiveness Council. Alberta Energy presented an overview of IEEP policy recommendations (including the \$5.00 per barrel credit for off gas ethane) which had been supported by the Energy Minister. It was also conveyed that these policy recommendations would be proceeding through the government review process, under the sponsorship of the Minister.

2011 IEEP Extension and Amendments

In March 2011, government announced a number of improvements to the IEEP. Changes to the program were a result of extensive consultation and industry input from all major stakeholders and two industry associations. The changes to the IEEP included:

- An extension of the IEEP the program was extended for a further five years, making December 31, 2016 the end of the applications seasons or tagging of incremental ethane.
- The IEEP is set to expire in 2021 or when the original C\$350 million has been fully expended.
- The implementation of a higher Credit value for ethane sourced from off-gases (from \$1.80 to \$5.00) recognizes the higher incremental capital costs associated with such projects, that off-gas capture delivers an environmental benefit and supplies another source of petrochemical feedstock.

- The definition of ethane under the regulation was also expanded to include ethylene – this effectively broadened the program to allow ethylene consumers such as Shell Chemicals to apply for credits under the program, thereby increasing the availability of incremental ethane.
- Removal of the Ethane Consumption Baseline incrementality test – Ethane Consumption Baseline was replaced with a project-by-project determination of incrementality. In the matter of off-gas, all off-gas was deemed to be incremental as no off-gas sourced ethane was being consumed at the time of the consultation.
- The time frame for projects to qualify for credits was also changed from five calendar years to 60 consecutive months – This change reflects the reality that under the five calendar year definition, projects coming online earlier in the year were able to obtain a higher value than those coming on later in the year.

While significant improvements were made to the IEEP, no additional government funding was committed to the program. The IEEP program regulation was amended on March 23, 2011 under Order in Council (O.C. 106/2011) published in Part 2 of the Alberta Gazette (April 15, 2011). On March 28, 2011 NOVA and Williams Energy Canada Inc. announced their intention to proceed with the Williams Off-gas Extraction Project which, when complete, will deliver an additional 10,000 barrels per day of off-gas ethane for value added upgrading.

Conclusions:

- It is common practice within government to conduct in depth consultations with industry when developing a program intended to incent industry to undertake specific types of projects that are aligned with government policy objectives. The industry consultation for these specific program changes was conducted in a very open and transparent manner.
- All industry participants in the IEEP consultation were advised of recommended policy changes at a March 8, 2011 meeting. The separate, \$5.00 Credit for off-gas ethane was supported by the Energy Minister and industry was noted the recommended policy change would be proceeding through government review.
- All industry participants in the IEEP consultation understood that government was considering a separate Credit for off-gas ethane by November 26, 2010.
- With more than 30 years experience across the energy sector, as a professional lawyer, engineer and as a Board Member of the Alberta Economic Development Authority, Val Mirosh is uniquely qualified to co-lead the Petrochemical/Chemicals Task Team.
- It is not uncommon for private-sector companies and other third-party stakeholders to seek and be provided with quotes from government ministers in support of initiatives they are announcing. In this case, providing a quote from the Energy Minister for the industry news release was viewed as an opportunity to increase the profile of the program and the program changes, subject to approval by Cabinet.
- The IEEP has supported a number of projects in addition to the NOVA/Williams Off-gas Project.
- All Alberta petrochemicals companies upgrading ethane/ethylene have applied for and received IEEP funding.
- Alberta Energy advised NOVA Chemicals Corporation that the Williams off-gas Extraction application had been approved in accordance with the IEEP guidelines in effect at the time on September 20, 2010.
- Approximately C\$200 million remain in IEEP.

Incremental Ethane Extraction Program: (Funded Projects)

Feedstock Type	Date Approved	Project Name	Company	Submission Year	Total Funds Committed	Total Barrels (Estimate)
Conventional	April 14, 2008	*Empress V Deepcut - IPF/Dow 2Q 2009 operating	Dow	2008	\$20,245,197.59	11,247,332
Conventional	April 14, 2008	*Rimbey Plant - Keyera/Dow 2Q 2009	Dow	2008	\$15,330,675.16	8,517,041
Conventional	Sept 14, 2010	**Hidden Lake Streaming - TCPL/NOVA 3Q 2011	Nova	2010	\$7,769,520.00	4,316,400
Off-Gas	Sept 14, 2010	**Redwater De-ethanizer - Williams/Nova	Nova	2010	\$90,000,000.00	18,000,000
Conventional	Under review	Harmattan Co-Stream Project	Nova	2011	\$38,880,000.00	21,600,000
Conventional	Under review	Musreau Deep Cut Project	Dow	2011	\$20,250,000.00	11,250,000
Conventional	July 26, 2011	Waterton NGL Plant	Shell	2011	\$3,240,000.00	1,800,000
Off-Gas	July 26, 2011	Scottford Off-Gas Capture (Refinery)	Shell	2011	\$10,800,000.00	2,160,000
					Total Funds Committed (Approved Projects Only)	Approximate BPD Production (Approved Projects Only)
					\$147,385,392.76	25,578

NOTE:

- 1) There was no application season held in 2009 due to uncertainty in the petrochemical sector, and the general economy.

Appendix A: IEEP Review Chronology

Date	Activity
March 2010	
March 25	Bill 1 <i>Alberta Competiveness Act</i> passed
May 2010	
May 5	Council Members Announced
June 2010	
June 2	Competitiveness Forum
June 7	CERI Table Discussion on Value-add as a kick-off meeting with petrochemical companies and current/potential feedstock suppliers to introduce the competitiveness review and discuss challenges to the industry
June 15	Department of Energy receives NOVA Chemicals Advanced Ruling Application under the IEEP for the Williams Off-gas Ethane Extraction Project.
June 23	Minister of Energy hosts Off-gas Symposium with companies and government officials to identify and discuss the value-add opportunities with a focus on the off-gas potential as feedstock for petrochemicals with a discussion on IEEP
July 2010	
July	One-on-One Meetings with Industry to discuss competitiveness challenges to potential actions that government and industry could take to alleviate these, including potential revisions to IEEP.
July 14	Council Members Appointed: O/C 248/2010
August 2010	
August 11 - Sept 2,	The Canadian Association of Petroleum Producers (CAPP) and Chemistry Industry Association of Canada (CIAC) co-host workshops with invited members and other stakeholders to identify and discuss feedstock and other issues, overall challenges to competitiveness and potential solutions. IEEP was discussed as part of the feedstock discussion.
August 24	Competitiveness Council Meeting
September, 2010	
September	One-on-One meetings with Industry to discuss competitiveness challenges and potential actions including potential revisions to IEEP
September 20	NOVA Chemicals is informed by the Department of Energy that their Williams Off-gas Extraction Project was approved .
September 30	Competitiveness Council Meeting
September 30	Task team presentation to Competitiveness Council potential changes to IEEP.
October 2010	
Week of October 4	Off-gas TOR finalized
Week of October 4	Internal GoA consultation with partner ministries and divisions
Week of October 4	Alberta Energy conducted analysis and research:
Oct 18- Nov 15	One on One meetings or calls with upstream, midstream and downstream companies to off-gas capture as potential solution to feedstock shortage.
October 26, 2010	Competitiveness Council Meeting
November	
November 26	Calgary workshop with full working group Companies included: Dow Chemical Canada, Nova Chemicals, Williams Energy, Suncor Energy, Shell Canada and Chemicals, Aux Sable Canada, Interpipeline Fund, Keyera Energy, Purvin & Gertz, Total E&P Canada Ltd, Alberta Innovates, Imperial Oil Products and Chemicals, Canadian Oil Sands Trust, Canadian Natural Resources Limited, Chemical Industry Association of Canada and Canadian Association of Petroleum Producers
Nov 26- Dec 22	Evaluate industry input, assess implications for existing programs, assess cost to government, and determine recommended policy changes. <ul style="list-style-type: none"> • Review with Task Team

	<ul style="list-style-type: none"> • Review with Environment • Review with Exec. Council • Review with Energy Exec. Team
December	
December	Drafting/changes to IEEP regulations and guidelines.
December 7	Competitiveness Council Meeting
December 10	Task Team benchmarking Report Released
January 2011	
January 4-	Finalize changes to IEEP regulations and guidelines.
January 4-	Internal government review of recommended policy change
January 20	Competitiveness Council Meeting
February	
February	Review of recommended policy change with Energy minister
February 18	Competitiveness Council Meeting
February 18	Task Team submission to Competitiveness Council <ul style="list-style-type: none"> • Revisions to IEEP in support of off-gas capture presented and endorsed
February	Energy preparation of regulatory change documents <ul style="list-style-type: none"> • MR • Notice of Intent to Regulate • Regulatory Impact Report
March	
March 8	Task Team/ Industry Stakeholder Workshop to report on recommended next steps and recommended policy change. <ul style="list-style-type: none"> • Alberta Energy presented an update and advised the working group on the recommended revisions to IEEP
March 22	Competitiveness Council Meeting
March 23	IEEP regulation amended under O.C. 106/2011
End March	Notice to natural gas and bitumen royalty payers regarding IEEP changes
April	
April 15	IEEP regulation amendments published in Part 2 of the Alberta Gazette
April 18	Competitiveness Council Meeting
April	Task Team final report submitted as information to Competitiveness Council
May	
May	Updated and amended IEEP Program Guidelines approved
May 18	Competitiveness Council final report issued
June	
June 1	MLA Ray Prins remarks on petrochemical task team actions and IEEP changes at CIAC meeting.
June 5	Energy presentation on IEEP changes at CERI Conference

Appendix B: Off-gas Discussion Document (Presented to industry on November 26, 2010)

This discussion paper does not represent Government of Alberta policy but rather is a vehicle to solicit discussion on potential actions, risks and consequences from industry's perspective.

Background

In September 2006, the Minister of Energy (Minister) released the Government's policy for the Incremental Ethane Extraction Program (IEEP) after several months of consultation with a cross-section of the natural gas based energy industry. Deliberations focused on the critical shortage of ethane feedstock for the petrochemical industry and the need for government to take action to sustain the industry. When launched, the IEEP was a key component in the on-going development of an energy value-added strategy for Alberta. Its intended purpose was and remains 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 ethylene derivative plants; and,
- enhance the Alberta Hub concept to attract future supplies of ex-Alberta gas.

The IEEP provides Fractionation Credits (Credits) to petrochemical companies consuming incremental ethane for value-added upgrading (such as ethylene and derivatives) and its objective is to sustain and grow the petrochemical industry in Alberta. The program was not designed to be company, project or project type specific. The program provides opportunities for all NGL producers to participate in the program through partnerships with the petrochemical industry. Ethane used for other purposes, such as export for its heating content, or for Enhanced Oil Recovery are not eligible to receive Credits.

Current State/Case for Change

Alberta's petrochemical industry is the largest in Canada and is a value-adding sector that delivers benefits to individual citizens and supports local, provincial and national economies. With annual shipments (including chemicals) of almost C\$9.2 billion and exports of more than C\$5.4 billion in 2009, the petrochemical industry employs over 7,500 Albertans. The industry upgrades NGL feedstocks, mainly ethane, with some manufacturing based on propane and butane. While nameplate capacity of Alberta's four ethane crackers is 270,000 barrels per day, total ethane feedstock available falls far short of this minimum requirement. In 2007, the Ethane Consumption Baseline was 245,000 barrels per day and today it is less than 220,000 barrels. Forecasts indicate Alberta's supply of NGL feedstocks will continue to decline in the near future due to reduced exports.

When introduced, it was hoped IEEP would support the production of incremental ethane feedstock required by the petrochemical industry to fill in existing petrochemical capacity. Unfortunately, the program did not deliver the barrels of ethane expected due to uncertainties associated with the global economic down-turn. To date, 12,000 barrels per day of incremental ethane have been approved under IEEP, but facilities did not achieve this number through 2009.

Off-gas Challenges and Opportunities

In order to sustain and grow Alberta's current petrochemical industry, new supplies of secure ethane are required with one area of increased supply being the capture of upgrader/refiner off-gases. Currently, off-gases are used internally by the refinery or upgrader as fuel. Off-gases are combusted to provide heat for various functions, such as steam production. Part of their appeal to upgrader operators is a function of their richness in alkanes and alkenes, which result in a higher heat content (BTU) per unit volume. Otherwise, upgrader/refiner operators would be forced to make up for this loss through purchases of replacement gas (i.e. methane).

It is that very richness that makes off-gases so appealing to the petrochemical industry as feedstock. Furthermore, the off-gas from oil sands upgrading represent a long-term, stable supply and the capture and use of this off-gas can also have a positive environmental impact. When NGLs like propane and butane are captured and removed, the remaining methane and hydrogen, which are less carbon intensive, can be returned to fuel oil sands operations. The end-result is a win-win, additional feedstocks for petrochemical production and fewer greenhouse gas (GHG) emissions.”¹ In fact, from discussions with industrial stakeholders there may be 10 per cent carbon dioxide (CO₂) and other greenhouse reductions in capturing off-gases and replacing them with natural gas. Other environmental benefits come from fewer particulate emissions at the burner-tip.

Government is committed to maintaining a vibrant petrochemical industry in Alberta, and encouraging the best environmental outcomes for its energy sector. Capturing off-gases helps both of these objectives.

Despite these benefits, off-gases have significant hurdles to overcome. Capturing off-gases is more capital intense than conventional ethane. Older refineries or upgraders must be retrofitted to allow for the loss of BTU value which occurs when the richer off-gases are replaced with leaner natural gas. Pipelines to transport the ethane from the refinery or upgrader to the petrochemical plant must be built. Off-gas capture equipment must be engineered so it does not interfere with the upgrader's primary purpose of converting heavy oil and bitumen into lighter crude oil. There are additional capital costs to ensure the off-gas ethane meets the specifications required by the petrochemical plant. Together, these constraining factors have quelled industry interest in using refining off-gases for further value adding.

The purpose of this discussion paper is to highlight several options that could be considered by the Government of Alberta aimed at moving off-gas capture forward. It poses a number of potential modifications to IEEP which would support the delivery of off-gas ethane to Alberta's petrochemical industry. It identifies the considerable environmental benefits from diverting these refining off-gases from the refining and upgrading process to Alberta's value-added industries. While some of the IEEP options for consideration are relevant to the production of conventional ethane, Government's broader IEEP review is being conducted in concert with the development of a natural gas strategy for the province. Feedback gathered during this off-gas industry consultation will help inform this review of IEEP.

¹ Chemical Industry Association of Canada, 2010-2011 Alberta Scorecard

Options for Consideration

IEEP was crafted to encourage the production of incremental ethane extraction in the province. However, current government support for off-gases to the C2² level are acknowledged to be insufficient given the significant additional capital expenditures required to produce ethane and ethylene from refining off-gases.

To provide some background for the following options being considered, the following should be noted:

- With more than C\$340 million remaining in IEEP, the majority of funding available has yet to be expended. This equates to approximately C\$54 million per year in funding allocation.
- Without action, spring 2011 will be the final period to apply for an Advanced Ruling Application (ARA) for a tagged incremental ethane source.
- Without action, IEEP will end on December 31, 2016.

Fractionation Credit

Current State

The maximum credit received under IEEP is \$1.80.

Option for Consideration

Change the value of the credit the value of the Credit

The current \$1.80 per barrel credit is insufficient financial support, given the significant additional capital required to produce C2+ from refining off-gases. Diversifying Alberta's ethane feedstock supply and reducing the environmental footprint of our energy industry are the foundation of increasing the value of the credit.

The value of the credit for off-gases could be increased to \$5.00 per barrel. Only projects delivering off-gas ethane or ethylene coming from a refining or upgrading stream for value-added in Alberta are eligible to receive the credit under the program.

Current State

The credit allocated to a petrochemical company is monetised through a commercial agreement with a natural gas royalty payer. This agreement may or may not cede part of the value of the credit to the royalty payer. At present, the Crown does not stipulate the maximum allowable cost to monetise the credit.

Option for Consideration

Set a maximum allowable cost to monetise the credit

Albertans expect Government to ensure provincially supported programs are delivering maximum value and supporting specific objectives. Although this proposal does not preclude some value being transferred to the upstream royalty payer, a clear limit could be set.

Timeframe for Projects to Qualify for Credits

² C2+ or ethane plus refers to an NGL stream of heavier hydrocarbons of ethane, propane, butane and pentanes. Reference may include olefin material such as ethylene, propylene, butylenes etc.

Current State

IIEP's guidelines state projects are eligible to receive credits for five calendar years. As a result, projects coming online early in the year obtain a higher value than those coming online later in the year. Also, current regulations specify that the period for submission of ARAs will expire spring 2011, and final credits will be paid for the calendar year 2016.

It can take up to three years for an off-gas project to begin producing ethane. As a result, the benefit of the credit may not start to be realized for up to four years and paid out up to nine years after the ARA is approved.

Option for Consideration

Time Span is set to 60 Months or less, rather than Five Calendar Years

Projects would be eligible for credits for a maximum of 60 months from the start of production.

Extend the Program for five more years

As there were somewhat low levels of uptake during the first few years of IIEP, the program could be extended by another five years for submission of ARAs (to spring 2016) and issue of credits for the production year 2020. It should be noted that this extension will not, at this time, come with additional levels of program spending.

Eligibility

Current State

The original IIEP structure has all credits being applied against natural gas royalties.

Option for Consideration

Credits for off-gases can be monetized by any energy royalty payer.

Companies paying any non-renewable royalty to the Crown could become a source to monetize a Credit issued under IIEP.

Current State

Type of company eligible to apply for credits

Only companies producing ethylene are able to apply for Credits. Concerns have been raised that this precludes any other company interested in producing incremental ethane from receiving the Credit.

Option for Consideration

Any company investing capital supporting the purchase of incremental ethane or ethylene (conventional or off-gas) for value adding in Alberta, is eligible to submit a project proposal under the IIEP.

Ethane Consumption Baseline and Tests of Incrementality

Current Status

Any project submitted under an ARA and any eligible project that submits an Annual Eligibility Application (AEA) to receive Credits must be put to an incrementality test under the Ethane Consumption Baseline.

Option for Consideration

Off-gas projects will be exempt from incrementality tests, since off-gas by its nature is incremental

There will be no tests of incrementality for off-gas sourced ethane. Since no off-gas has been available previously as petrochemical feedstock, it is considered to be incremental by its nature.

Other Considerations

Restrictions on the maximum volume of ethane that is eligible for credits to stay within program spending

A concern of Government is that the current allocation of funding to IEEP may be insufficient to fund all projects to their maximum volume. Government's support is limited to projects on a first in basis, until IEEP Credits are fully allocated.

Inclusion of a trigger mechanism for credits to be allocated

Industry has proposed that credits not be given to just any project. It has been proposed that a Credit only be given under specific circumstances of need. Such proposals range from a formulation of the profitability of a specific project, to a measure of comparison of feedstock price between other, competing jurisdictions and this Alberta.

Alberta Environment

Alberta Environment recognizes that capturing and processing upgrader/refinery off-gas can have a positive environmental impact, when compared to on-site combustion. For example, preliminary estimates indicate that up to 1 MT CO₂e of greenhouse gas emissions could be reduced through off-gas utilization, which is a significant contribution to Alberta's Climate Change Strategy. Off-gas utilization has the potential to both lower the carbon intensity of a barrel of oil, which is critical to ensuring that we meet the growing expectations of our energy customers across North America, and contribute to Alberta's value-added petrochemical sector.

Alberta Environment supports this process of investigating ways to encourage off-gas utilization, and is committed to ensure that barriers, issues, and areas of concern associated with environmental requirements (regulatory or other) will be duly considered to help realize the objectives of the this program.

Alberta Environment is currently working to fully understand the overall contribution of off-gas utilization to meeting regional and broader provincial environmental interests. Consideration will be given through these processes to identify opportunities for supporting actions to utilize off-gas streams.

Conventional Ethane and IEEP

Recent studies have shown if off-gases were collected from all current and expected upgrader capacity they could support a two MTA petrochemical industry, or an additional two world-scale ethylene plants in Alberta. This would generate \$1.5 billion in GDP and impact 13,000 to 17,000 person years of employment from construction. It would generate an additional C\$1.3 billion in annual GDP and impact approximately 4,500 permanent, high paying, highly educated

jobs.³ However, conventional sources of ethane will continue to play the largest role in the supply picture going out into the future. While off-gases are a substantial source of future ethane supply, it is expected conventional ethane will continue to provide the greatest source of feedstock for the industry with off-gases being a component of the overall supply picture. Many of the options to move off-gases forward are applicable to conventional ethane production and have been accounted for as part of this re-examination. Furthermore, Alberta Energy will continue to work to align our policies on ethane production with other value-added and environmental policies crafted by the Government. The position of the Government continues to be to ensure an enabling policy framework, which maximises the benefits accruing to the province from resource development.

³ McKinsey & Company, discussion document for oil sands off-gas symposium, June 23, 2010

Appendix C: Department of Energy Presentation to Working Group, March 8, 2011

ALBERTA COMPETITIVENESS COUNCIL

INCREMENTAL ETHANE EXTRACTION PROGRAM (IEEP)

2011 EXTENSION AND AMENDMENTS (PROPOSED)

March 2011



IEEP OBJECTIVES

- Program commenced in 2007 with a funding allocation of \$350 million over a ten-year term
- Program designed to:
 - Encourage value-adding in Alberta
 - Address tight ethane supply
 - Encourage new investment in ethane extraction facilities
 - Attract new petrochemical derivative plants
 - Attract northern gas
- Not company nor project specific



IEEP RESULTS TO DATE

- Two projects operational under IEEP:
 - **Keyera Rimbey** – approved for up to 5,000 BPD
 - **Empress V** – approved for up to 7,000 BPD
- There are currently two approved, not yet operational projects:
 - **Hidden Lake Streaming** – approved for up to 1,300 BPD
 - **Williams Off-Gas** – approved for up to 10,000 BPD
- \$310 million of the original \$350 million remains for value-adding by the petrochemical industry



2010/11 CONSULTATION

Lessons Learned:

- Program complexity/uncertainty and difficulty in monetizing Credits is limiting industry uptake
- There remains a lack of Industry consensus for increasing/changing the Credit value for conventional ethane
- There is broad support for government action to use off-gas ethane/ethylene from upgraders and refineries as alternative feedstock sources
- Other opportunities: other NGLs, diversification of primary feedstocks, hydrogen, reputation management



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Extend the IEEP for another five years, to 2016

Rationale/Outcome:

- Increased volumes of conventional and off-gas ethane will be available for value-adding



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Credit value for off-gas ethane is set at \$5.00 per barrel (Credit for conventional ethane remains at \$1.80 per barrel)

Rationale/Outcome:

- Off-gas ethane becomes an alternative source of feedstock that is not dependent on natural gas flows
- Off-gas capture reduces emissions produced by oil sands
- Lack of industry consensus for changing Credit for conventional ethane
- Long-term natural gas strategy and policies related to conventional are in development



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Remove annual incrementality test once project is approved

Rationale/Outcome:

- Increases certainty on project economics
- Increases Program uptake
- Natural gas flows and related NGLs expected to decline
- Increases volumes of ethane for value-adding
- Off-gases deemed as incremental
- Limitations clause allows anomalies to be addressed



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Fractionation Credits to be monetized over 60 consecutive months

Rationale/Outcome:

- Increases certainty on project economics
- Avoids issues with project start up
- Increases Program uptake
- Increases volumes of ethane for value-adding



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Fractionation Credits to be monetized by any natural gas, as well as bitumen royalty payers

Rationale/Outcome:

- Continues as a royalty deferral program
- Increases pool of players from which to monetize Credit
- Increases Program uptake
- Increases volumes of ethane for value-adding



2011 IEEP AMENDMENTS (RECOMMENDED)

Amendment:

Any Alberta-based ethane/ethylene consumer is eligible to submit IEEP project proposal

Rationale/Outcome:

- Continues as a royalty deferral program
- Levels playing field
- Increases Program uptake
- Increases volumes of ethane for value-adding



GOVERNMENT REVIEW PROCESS

- IEEP amendments approved by Minister
- Policy recommendation proceeding through Government of Alberta review
- Approval expected to be complete by March 31
- Regulatory amendments
- Revised guidelines



QUESTIONS ?

Alberta Energy thanks Industry for participating in this Process



Appendix D: September 20, 2010 letter to NOVA Chemicals

Government of Alberta ■

Oil Sands Strategy & Operations
Petroleum Plaza, NT
9945 – 108 Street
Edmonton, Alberta T5K 2G6
Canada
Telephone: 780-422-7247
Fax: 780-544-3234
Email: Debbie.Dittaro@gov.ab.ca
www.alberta.ca

September 20, 2010

AR 6087

Mr. Paul Bourdon, PMP, P.Eng.
Director Regulatory Affairs
NOVA Chemicals Corporation
1000 Seventh Avenue, SW
P.O. Box 2518
Calgary, Alberta T2P 5C6

Re: Williams Off-gas Extraction Project

Dear Mr. Bourdon:

I am pleased to advise you that your Advanced Ruling Application dated June 15, 2010 for fractionation credits has been approved by the Minister of Energy under the Incremental Ethane Extraction Program.

Alberta Energy will assess the volumes of ethane eligible for credits after the in-service date as described in your application and upon receipt of your Annual Eligibility Application in accordance with the Incremental Ethane Extraction Program guidelines.

Your commitment to growth of the petrochemical industry in Alberta is greatly appreciated. Congratulations on your successful application for this project under the Incremental Ethane Extraction Program.

Sincerely,

Debbie Dittaro
Acting Branch Head
Value-Added Development Branch

Freedom To Create. Spirit To Achieve.

Appendix E: Industry/Government Off-gas Working Group Terms of Reference

Industry Consultations Terms of Reference

MANDATE

On market development, the Industry/Government off-gas Working Group will identify issues, opportunities and barriers associated with sourcing incremental NGL feedstock (particularly ethane) from up-grader off gases. The working group will assess current provincial policies and programs such as the IEEP, to determine their suitability for ethane extraction from off-gases. It will recommend strategic policy solutions necessary to fully capture value added opportunities related to off gas extraction.

On the environment, the Industry/Government off-gas working group will articulate the full range of benefits from development of off-gas opportunities, and how this activity contributes to a reduced overall environmental footprint for oil production. Policies, programs and measures to recognize this environmental performance may be identified but are not part of the formal mandate.

MEMBERSHIP

The off-gas working group will be considered an extension of the Petrochemicals and Chemicals Task Team co-chaired by Ray Prins and Val Mirosh. Sponsored by the Acting Assistant Deputy Minister of Oil Sands Strategy and Operations Division at Alberta Energy, the working group will report through Mr. Prins and Mr. Mirosh to the Minister of Energy and the Competitiveness Council.

- Industry members from the following organizations will serve as advisors to the Working Group:
 - Dow Chemical Canada
 - Nova Chemicals
 - Williams Energy
 - Suncor Energy
 - Shell Canada and Chemicals
 - Aux Sable Canada
 - Interpipeline Fund
 - Keyera Energy
 - Purvin & Gertz
 - Total E&P Canada Ltd.
 - Alberta Innovates
 - Imperial Oil Products & Chemicals
 - Canadian Oil Sands Trust
 - Canadian Natural Resources Limited
 - Chemical Industry Association of Canada (CIAC)
 - Canadian Association of Petroleum Producers (CAPP)

SUPPORT STAFF

Government of Alberta staff from:

- Alberta Energy
- Finance and Enterprise
- Alberta Environment

GUIDING PRINCIPLES

- Alberta Energy is the lead ministry with respect to potential revisions to the IEEP.
- Participants are expected to maintain confidentiality on matters discussed.
- Participation is voluntary and participants are asked to think beyond their organizational needs to the needs of Albertans.
- Participants agree to explore opportunities for innovative and creative solutions.
- Participants are free to pursue the individual mandates of their organizations.

ACTIVITIES

Participants will focus on key issues and potential solutions

- Participants commit to bringing strategic issues to the table for consideration and discussion.
- Participants will identify specific issues to focus on (e.g. barriers to switching from fuel gas to natural gas - focus meetings on examination of that issue and generating potential solutions).
- The working group will produce a draft and final plan for government and industry review.

Industry experts will provide data and analysis on relevant issues

- Support staff may direct internal Government of Alberta staff and industry experts to supply relevant data as required.

DELIVERABLES AND TIMELINES

- An initial outline of issues, opportunities, barriers and possible policy levers will be presented to the Minister of Energy by mid December 2010.
- A final report with recommendations will be presented to the Minister by March 2011.
- This report with recommendations will be submitted as information to the Competitiveness Task Team.

SUPPORTING ACTIVITIES

One-on-one meetings with industry stakeholders and Government of Alberta officials will be held as required.

Industry participants and the Working Group will meet a minimum of two times to:

- Review and evaluate current policies and legislative mechanisms such as the IEEP and the Gas Resources Preservation Act in order to determine applicability to a nascent off gases to petrochemicals industry.
- Identify possible off gases to petrochemicals projects which could be readily completed with a supportive policy framework.
- Identify potential barriers to success.

BUDGET

Existing staff and budget resources.

Appendix F: Issue Paper for the Alberta Competitiveness Council

PETROCHEMICAL TASK TEAM

Ethane feedstock facilitation and potential revision of the Incremental Ethane Extraction Program (IEEP).

ISSUE

Government of Alberta action is required to help sustain the existing petrochemical industry in the face of declining ethane feedstock availability in Alberta.

If properly managed, optimizing ethane extraction from Alberta's intra-provincial flows of natural gas production and developing alternative sources of ethane feedstock from off-gases associated with bitumen processing will benefit Alberta's economy.

BACKGROUND INFORMATION AND ANALYSIS

The declining volume of ethane feedstock available to Alberta's petrochemical industry has been threatening its sustainability and limiting its growth.

A shortage of ethane has forced petrochemical companies to reduce their processing facility operating rates and required the use of more costly NGLs, such as propane, as feedstock. This has reduced the sector's profitability.

Traditional feedstock has come primarily from ethane extracted from natural gas in export-pipeline straddle plants close to the Alberta border, and a smaller portion from field processing facilities.

Today, less natural gas is flowing through the straddle plants, as our natural gas production has declined and more of it is being used within the province for industrial processes such as oil sands production. This means less ethane is available for the petrochemical industry.

Significant volumes of ethane remain in conventional natural gas consumed in Alberta today. Much of this gas does not enter extraction facilities before it is consumed. Increasing intra-Alberta ethane extraction would require investments in new infrastructure and extraction facilities.

Ethane can also be extracted from upgrader and refining off-gases. These are gases that are produced when bitumen or conventional oil is processed to create products such as Synthetic Crude Oil (SCO), gasoline, and diesel. Large volumes of these natural gas liquids rich off-gases are produced in Alberta and are generally consumed as fuel by the processing facility. However, off-gas development has been slow in Alberta due to the economy and business decisions.

Currently Williams Energy acquires off gases from Suncor's upgrader and converts it to petrochemical feedstock. Aux Sable recently announced a project to capture Shell's off gases.

The Government of Alberta introduced the IEEP in 2007 to help alleviate the growing shortage of ethane. The program incents companies to build new ethane extraction and production facilities by defraying some of their costs against royalties paid on ethane. The Government of Alberta had hoped this program would incent enough ethane production to off-set forecasted declines.

Companies note that uncertainties in the process and inadequate credit levels are limiting uptake of the program. Further, while the current IEEP program is tied to natural gas royalties, off-gases production is tied to bitumen processing.

Under the program, companies with approved incremental ethane sources are entitled to a \$1.80 per barrel of ethane credit against natural gas royalties for five years.

The majority of ethane in Alberta is currently sourced from conventional natural gas streams. Several issues have coincided to reduce the production of natural gas:

1. *Price* – The price of natural gas has dropped since its 2007 highs. The current price does not encourage significant exploration and drilling, leading to a decline in production. Less natural gas production equates to less ethane extraction.
2. *Maturity of the Western Canadian Sedimentary Basin (WCSB)* – The geologic formations from which natural gas is produced is reaching maturity. Future volumes of liquids rich natural gas will generally be more expensive to develop.

Ethane production from conventional sources of natural gas is projected to decline. Therefore, other sources of ethane are required to sustain and grow the petrochemical industry.

POTENTIAL RECOMMENDATION

The IEEP program should be tailored to facilitate new incremental ethane sources from both conventional and alternative sources such as off-gases.

Council could support a program review that is underway to determine required modifications that will better incent incremental ethane in Alberta, including assessing if a separate program for off-gases is necessary.

RATIONALE & POTENTIAL RISKS

Off-gases and other sources of incremental ethane are generally more expensive than current ethane sources. IEEP encourages greater levels of ethane extraction by defraying some of the associated costs through credits provided by the Government of Alberta. Without increased investments for ethane extraction, the Alberta petrochemical industry is expected to become smaller over time.

Risks include

Business costs in Alberta have decreased recently, improving the project economics associated with building upgraders, refineries and petrochemical plants in the province. Should these cost pressures again be increased, there is a risk that much-needed investments will be foregone.

A potential downside of changing the IEEP would be its acceptability to industry. The current structure of the IEEP was agreed to by multiple parties as an acceptable program, despite several shortcomings as detailed above.

It is possible that altering the IEEP to be more acceptable to the petrochemical companies would make the program less appealing to mid-stream operators. Mid-stream companies have already complained to government that the petrochemical industry has room to pay more for ethane. Depending on the nature of

changes to the IEEP, it could be seen as government interference in the market in favour of the petrochemical industry over other industries.

ALTERNATIVES

Carbon regulation to increase the cost of carbon emissions - this would encourage off-gas capture and reduce companies carbon footprint. For example, ethane produces more carbon dioxide (CO₂) when burned than methane. If the price of emitting CO₂ increases, the benefit of capturing those NGLs and transforming them into carbon sinks, such as plastics, also increases. Off-gas capture and use by the petrochemical industry effectively reduces emissions from bitumen production.

Regulation of bitumen processing – the province could introduce regulations for operations processing bitumen to require mandatory capture of off-gases.

FINANCIAL IMPLICATIONS

Currently, the IEEP has significant remaining funds - approximately C\$300 million. It is possible that this will be sufficient payout for any other projects.

A program review will assess the risk of the current fund allocation being insufficient to incent enough ethane production.

Revisions to the IEEP could provide greater certainty to industry of receiving benefits from the program. This could result in greater private investments, leading to benefits to the province such as employment and taxes, as well as benefits to the petrochemical industry such as sustainability and the ability to grow the industry.

Appendix G: IEEP Program Guidelines (2011 Extension and Amendments)

Introduction

The petrochemical industry in Alberta is currently based on adding value to NGL feed stocks, mainly ethane, ethylene and ethane/ethylene mixes¹ with some manufacturing based on propane and butane. Forecasts indicate that the supply of NGL feedstocks will likely continue to decline 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 feedstock will be required. Significant re-investment in supply infrastructure in Alberta may be required to take advantage of the potential petrochemical growth opportunities.

For the purpose of this program and within these guidelines, the use of the term "ethane" includes an ethane, ethylene and/or ethylene mix where appropriate (e.g. ethane/ethylene mix from off-gas capture). 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 C\$9.2 billion and exports of more than C\$5.4 billion in 2009 the petrochemical industry employs over 7,500 Albertans. While nameplate capacity of Alberta's four ethane crackers is 270,000 barrels per day, total ethane feedstock available for value adding falls far short of this minimum requirement. 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, lowers the carbon intensity of a barrel of oil, and contributes to Alberta's value-added petrochemical sector.

In September 2006, the 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); and
- attract new investment in petrochemical derivative plants.

This program provides Credits to the petrochemical companies that consume incremental ethane and ethylene for value-added upgrading (e.g. production of higher valued products, such as ethylene, polyethylene and other 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 and oil sands refiners and upgraders 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 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. Guidelines were amended again in 2011 to extend the program to 2016

and to make revisions based on industry feedback gathered in fall, 2010, especially with regard to supply from off-gas projects. These guidelines are applicable to all existing approved projects.

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/ethylene as feedstocks in the manufacture of value-added petrochemical products at a facility.

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

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

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

Incremental Consumption: means industry-wide consumption of ethane from a new source.

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/ethylene (but which may also be expressed in dollars per barrel) established by the Minister, by order, for each year.

Off-gas: means the alkane/alkene rich by-products produced from refining and upgrading of bitumen processes.

Year: 12 consecutive months from date of project start-up.

Eligibility

Credits under this program are earned by companies based on the amount of actual, eligible ethane they consume. For a company to qualify for Credits it must be a company that is or will be an owner in a facility located in Alberta that consumes eligible ethane as feedstock. Credits only apply to ethane produced in Alberta.

Eligible volumes must be incremental from a new supply source as of April 1, 2007; examples of eligible sources may include, increased extraction capacity at existing gas processing plants, new extraction capacity and off-gases from oil refiners or oil sands upgraders. However, it is important to note that a new ethane source must not be available for consumption at a facility as of the date of the application.

Although the regulation in compliance with most legislation uses metric measurements and states “ethane/ethylene 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/ethylene is equal to 6.28981 barrels²). For off-gases, and in the absence of an operating facility at this time, the ethane mixture may be considered eligible and will be measured as an ethane equivalent.

During the period of April 1, 2007 to December 31, 2016, all approved incremental ethane may be eligible for Credits. After January 1, 2017, only ethane consumption related to “tagged” sources (specific projects tagged on or before December 31, 2016) as identified in an advanced ruling process may be eligible for Credits until December 31, 2021.

Incremental consumption from tagged projects will be eligible for credits for 60 consecutive months 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	2021
Ethane/ethylene Consumption Start Date	2007										
	2008										
	2009										
	2010										
	2011										
	2012										
	...										
	*2019										

* Projects were “tagged” before December 31, 2016 but in-service date occurred after December 31, 2016. Note: projects in-service after 2019 will not meet the three year in-service criteria described in the Application section.

Incrementality Criteria

Incrementality for any project will be determined at the Advanced Ruling Application phase, based on various characteristics of the project such as traditional output of the proposed facility and issues regarding the incremental nature of the ethane. Once approved, volumes consumed in accordance with the program will be deemed incremental.

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. The Unit Fractionation Credit value at the start of the program has been set at \$1.80 per barrel for natural gas derived ethane.

Recognizing that further capture of off-gas to the ethane level is considerably more capital intensive than conventional ethane, the Unit Fractionation Credit value is set at \$5.00 per barrel for off-gas ethane. The premium for off-gas capture down to the ethane level further recognizes that off-gas use in Alberta can reduce emissions by up to one million tonnes of emissions annually – equal to about 10 per cent of Alberta’s current reduction obligation under the Specified Gas Emitters Regulation. Using off-gases in value-added production contributes to a reduced greenhouse gas intensity of a barrel of oil from Alberta’s oil sands.

The Minister will announce the value prior to February 1 each year thereafter. 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.

IIEP expires in 2021 or when fully expended. Unused Credits accrue to the following year for a total program cap of C\$350 million from 2007 to 2016. 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. Documentation is provided in 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 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 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.

In each year of the program to 2016, or until program funding has been fully committed to tagged projects, Alberta Energy will hold an application season, typically two months, for the companies to submit their ARAs. The Application season is held annually from April 1 to May 31. There will be no further application seasons or tagging after December 31, 2016.

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 (i.e. not available or in operation at the time of the ARA application) (“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/ethylene consumption and associated value-added production; and
- project owner.

Specific ARA projects approved by the Minister will be tagged and eligible for Credits for 60 consecutive months 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 three years of the application. Note: the three-year in-service period may be extended upon request and at the discretion of the Minister, for capital intensive projects that may require longer than 36 months to design and construct.

Incremental volumes approved in the ARA represent the maximum allowed credit level.

(2) Business Case:

The ARA must also include a detailed business case to justify the need and support for the 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/ethylene);
- 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/ethylene consumption is providing long-term benefits that outweigh the costs of the credit to the Crown.

Alberta Energy will review each application for completeness.

ARAs received during the application season will be posted as they are received on the Alberta Energy'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 Alberta Energy.

Alberta Energy will issue a letter to the applicants advising of their ARA status by the end of June following the application season.

Anticipating that the basis for each project may change during the detailed design and engineering phase, an application to amend an existing ARA may be made, provided that the project is not in service at that time. Amendment requests will be evaluated on a project by project basis and must be consistent with program guidelines.

(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;
- the value of the credits earned; and

- the name of the royalty payer, the type of royalty account (natural gas or bitumen) to which the credits are to be applied and the distribution of those credits where more than one royalty payer or royalty account is identified.

Alberta Energy will issue a letter to confirm the value of the Credits earned and the date on which the credits are applied to the royalty payer's account.

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

Anne Denman
Executive Director
Value-Added and Strategy Integration
Alberta Department of Energy
6th Floor, North Petroleum Plaza
9945 - 108 Street
Edmonton, Alberta T5K 2G6

Issuance of Fractionation Credits

Alberta Energy will issue Credits to royalty accounts as identified in the company's annual AEA by June 1 of each year, unless identified otherwise. The aggregate value of Credits issued for each year, and for the IEEP program to-date, will be posted on the Department of Energy's website shortly thereafter.

Using Fractionation Credits

Credits are used by way of a reduction to royalties' payable on bitumen or natural gas and natural gas by-products and must be monetized by the company during the fiscal year in which they are issued (April 1 to March 31). If the company that receives Credits is not a royalty client of Alberta Energy, the Credits will have to 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 provide sufficient information in its annual AEA submission for Alberta Energy to allocate royalty credits. In the event these allocations need to be amended, the company may advise Alberta Energy by letter until such time as the credits have been applied by Alberta Energy to the royalty client accounts.

Natural gas royalty clients will see the deduction for the earned credit value applied as a line item on their royalty invoice under the other Financial Transactions portion of the invoice. This will occur in the month following application of the credit.

Bitumen royalty clients will see the value of the Credits in their annual statement.

Credits are non-interest bearing.

IIEP Key Dates Date	
Annual Eligibility Application (AEA) present to 2021	Activity
March 1	Company submits AEA for volumes from tagged projects in previous calendar year
March 1 to June 1	Department reviews and confirms AEA and advises Company in writing when credits applied to royalty payer account(s)
June	Department posts value of credits issued in current year and program total to date on website
Advanced Ruling Application (ARA) 2011 to 2016	
April 1 to May 31	Company submits ARAs during Application Season Department reviews then posts on website for stakeholder comment
June 1 to June 30	Minister review and approval Applicants advised in writing and website updated

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 Credits under this regulation.

The Minister may request that Alberta Energy's Auditors have access, on a confidential basis, to all documents including production reports, ethane purchases and commercial agreements from time to time.

Limitations

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

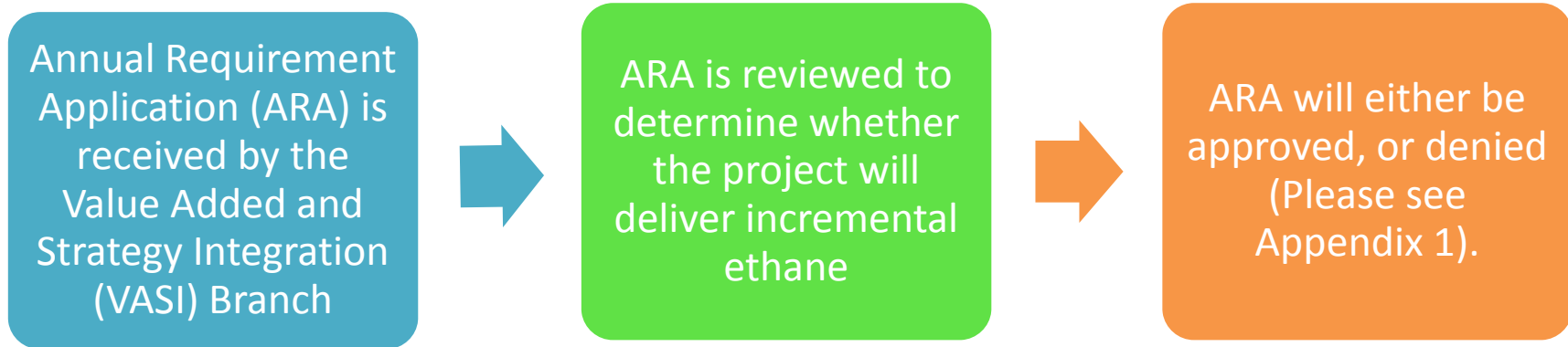
The Minister may refuse to grant credits under the IIEP to a person/company if the Minister believes that the regulations have been contravened, or that business arrangements were made that artificially affected the determination of the credits. In addition, the Minister may cancel and/or reduce accordingly 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 Credits, including compound interest (Alberta Treasury Branch prime rate plus one per cent).

Contact

For further information please contact:
 Alberta Department of Energy
 Value-Added and Strategy Integration Branch
 9945 - 108 Street Edmonton, Alberta T5K 2G6

Appendix H: IEEP Process Flow Chart



- Application season is held annually from April 1 to May 31.
- No more application seasons will be held after December 31, 2016.

- Energy staff will review the application initially to ensure it has potential to provide incremental ethane.
- ARAs received are posted to the DoE website for 10 working days. Stakeholders on the IEEP e-mail list are informed about the posting.
- During this time period, concerned stakeholders are able to comment on the ARAs.

Project is approved

If the project is approved, the facility must commence operations within three years of application

The project must, after operations commence, submit an Annual Eligibility Application (AEA) which demonstrates the incremental volumes of ethane produced.

Project is denied

If the project is denied, a company's only recourse is to appeal the decision and convince the Crown that the program does fall within the conditions and regulations of the Incremental Ethane Extraction Program.

- Appeals may be filed for project denials, but must be submitted to the Department of Energy.
- Reviews are performed on their legal merits on a case by case basis.
- The Crown reserves the right to audit the books of companies that have applied for credits.

Once the AEA is received, and found to be accurate, the Fractionation Credits are appointed to the appropriate Royalty Payer's account.

A formal letter is sent to the applicant to the IEE Program. The applicant is the petrochemical company.

A memo is sent to the appropriate royalty collection Branch (ie. Natural Gas or Bitumen royalties) with information on total credits and the royalty account they are to be applied to.

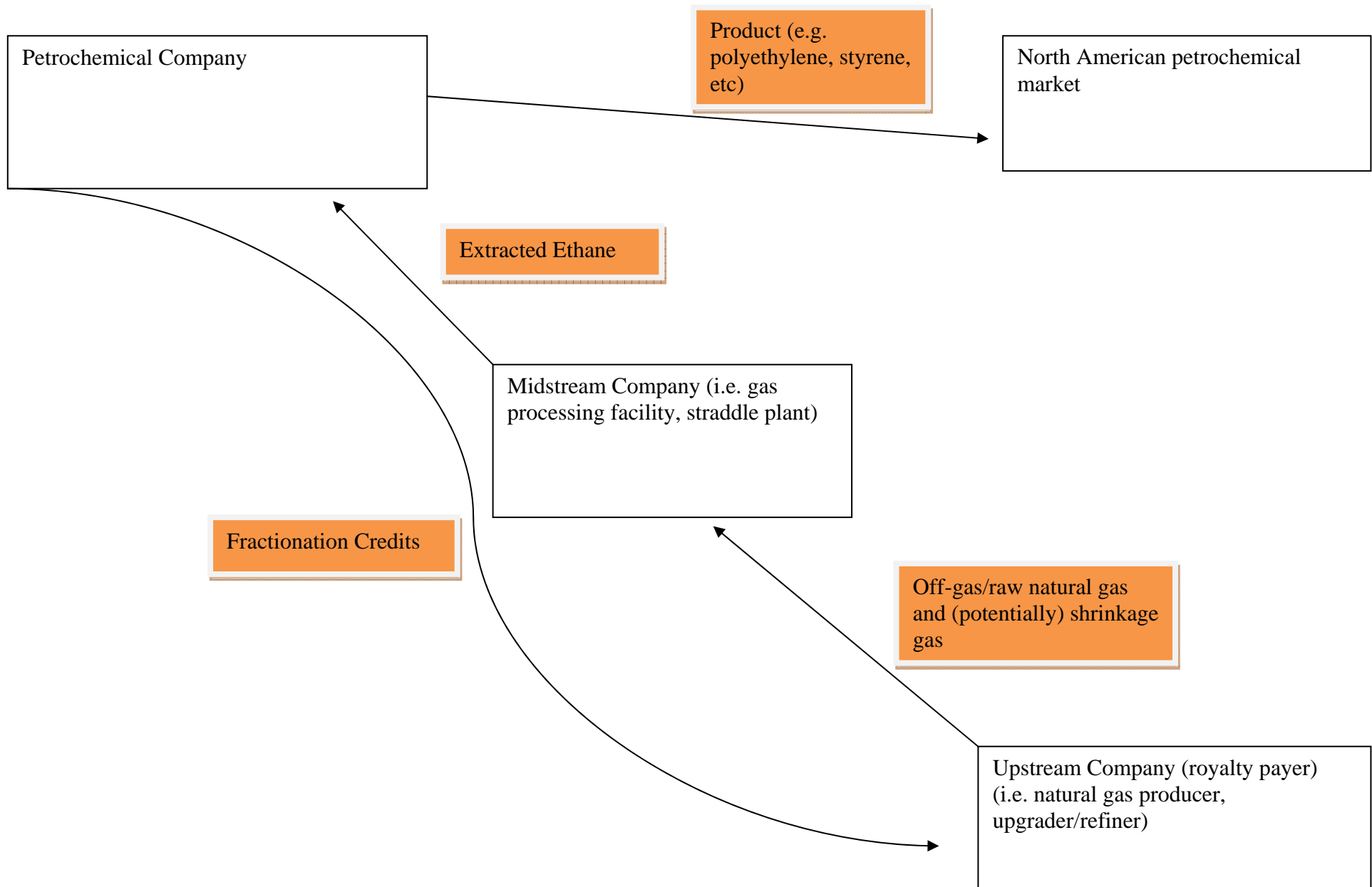
ARA Stage of Process

- The Value Added and Strategy Integration group reviews the documents submitted for the ARA. It is then determined on a case by case basis whether or not the ARA requires further review by more technical oriented groups. For example, if there are significant questions involving the engineering processes around an incremental ethane source, VASI will consult with internal engineering groups.
- In the 2011 IEEP application season, briefing notes have been crafted for the Minister and Deputy Minister to keep them appraised of developments⁴. In previous years, briefing notes were provided as requested.
- If an ARA is deemed worthy of approval, it is then crafted into a memorandum from the Deputy Minister to the Minister. Generally, the Memorandum goes up to the DM's office with briefing material included.

AEA Stage of the Process

- Each year, companies with operational projects submit AEAs to VASI to request credits for ethane production in the province.
- Approvals for AEAs are determined within the Branch level traditionally.
- As stated in the diagram above, a formal letter is sent to the project applicant (i.e. the petrochemical company). This is followed up internally with a memo to the specific royalty collection group (i.e. natural gas royalty or oil sands royalty).

⁴ It should be noted that the 2011 IEEP application season saw greater controversy with timing and project applications than has happened in previous years.



The Incremental Ethane Extraction Program (IEEP) Credits process.

- The Petrochemical Company arranges to purchase ethane from a Mid-stream producer.
- The ethane that is removed from the stream has value as fuel. Therefore, the Petrochemical Company is obligated to replace this lost ethane with “shrinkage gas” – so that the total energy in the stream remains the same.
 - This replacement is true of both natural gas and off-gas producers.
- The Petrochemical Company contracts with an Upstream Natural Gas Company to buy shrinkage gas to replace the ethane that has been removed by the Mid-stream company.
 - Once again, energy content must remain the same whether for natural gas or off-gases.
- The Petrochemical Company is able to offer the Upstream Company (if they pay royalty) Fractionation Credits to reduce the royalty burden of the Upstream Company – and by extension, the Upstream Company offers some benefit back up the chain (for example, through reduced cost of shrinkage gas).
 - It is important to note that the exact arrangements of cost of shrinkage gas are dealt with between these various companies. Government does not get involved in this process.
- So, the Upstream Company produces the raw feedstock. The Mid-Stream Company extracts the ethane and brings it up to the specifications required by the Petrochemical Company. And the Petrochemical Company upgrades the ethane/ethylene to a higher value product.
 - It is important to note that the two main values of ethane is as an energy source (i.e. sent to the burner tip) or extracted and sent to be further upgraded.

NOTE:

- The Petrochemical Company is the entity that is awarded the Fractionation Credits. And they are awarded after production (the Petrochemical Company must submit documentation that ethane has been produced from the facility in question).
- The Petrochemical Company then directs which royalty payers to allot the credits toward.

Appendix I. WebPosting of Willams/Nova Application for Comment

Name: Williams Off-gas Ethane Extraction Project

Applicant: NOVA Chemicals Corporation

Project Description: Williams Energy intends to supply ethane to NOVA Chemicals Corporation from their off-gas facility in Redwater. This project will provide for the necessary equipment to be able to capture ethane and ethylene out of the off-gas.

Project Volumes: The estimated incremental ethane extraction level is 10,000 barrels per day (1580 cubic metres per day).

Estimated In-Service Date: Quarter 4, 2012

Appendix J: Order in Council 106/2011 (March 23, 2011)

O.C. 106/2011

A.R. 43/2011

March 23, 2011

The Lieutenant Governor in Council makes the Incremental Ethane Extraction Amendment Regulation set out in the attached Appendix.

For Information only

Recommended by: Minister of Energy
Authority: Mines and Minerals Act
(sections 5 and 36)

APPENDIX
Mines and Minerals Act
INCREMENTAL ETHANE EXTRACTION AMENDMENT REGULATION

1 The *Incremental Ethane Extraction Regulation* (AR 150/2007) is amended by this Regulation.

2 Section 1 is amended

(a) in subsection (1)

(i) in clause (j) by striking out “exceeding the industry ethane consumption baseline”;

(ii) by repealing clause (k);

(iii) by adding the following after clause (m):

(m.1) “off gas” means the alkane- or alkene-rich by-products produced from the process of refining and upgrading bitumen;

(m.2) “operator” has the same meaning as in the *Oil Sands Royalty Regulation, 2009* (AR 223/2008);

(b) by adding the following after subsection (1):

(1.1) In this Regulation, a reference to ethane includes a reference to ethylene.

3 Section 4 is repealed.

4 Section 5 is amended

(a) in subsection (1)(b) by striking out “December 31, 2016” and substituting “December 31, 2021”;

(b) by repealing subsection (3) and substituting the following:

(3) Subject to subsection (1)(b), the tagging of a new ethane source is valid for a period of 60 consecutive months beginning on the date on which the tagged ethane source commences production.

(c) in subsection (4) by striking out “December 31, 2011” and substituting “December 31, 2016”.

5 Section 6 is repealed and the following is substituted:

Eligible ethane

6 Eligible ethane is ethane, as determined by the Minister, from new ethane sources in Alberta, including off gas from oil sands refiners or upgraders, consumed at all facilities in a year between April 1, 2007 and December 31, 2021.

6 Section 7(2)(b) is amended by striking out “2016” and substituting “2021”.

7 Section 8 is amended

(a) in subsection (1) by adding “or the *Oil Sands Royalty Regulation, 2009* (AR 223/2008)” after “*Natural Gas Royalty Regulation, 2002* (AR 220/2002)”;

(b) in subsections (2) and (3)

(i) by adding “or operators” after “royalty clients”;

(ii) by adding “or operator” after “royalty client”.

8 Section 9(1)(a) is amended by striking out “2016” and substituting “2021”.

9 Section 11(a) is repealed.

10 Section 12 is repealed and the following is substituted:

Repeal

12 This Regulation is repealed on November 30, 2022.

Appendix K: News release email exchange

Jay O'Neill

From: Jay O'Neill
Sent: March 18, 2011 4:23 PM
To: Courtney Luimes
Subject: Re: Draft (confidential) Press Release

Yup

From: Courtney Luimes
To: Jay O'Neill
Sent: Fri Mar 18 15:09:09 2011
Subject: FW: Draft (confidential) Press Release

Will you have a draft quote done for the Minister on this and send our way for approval by Tues morn? Thx

From: Lorraine Royer [mailto:lroyer@globalpublic.com]
Sent: March 17, 2011 4:37 PM
To: Courtney Luimes
Subject: Draft (confidential) Press Release

Courtney,
As mentioned last week, Williams is preparing a draft (confidential, below) for when the announcement is eventually made. You'll see there is a spot in there for a quote from the Minister. Don't need to bug you about this Courtney - if you have a comms person you want me to deal with, just let me know.

thanks.

Lorraine

From: Chappell, David [David.Chappell@Williams.com]
Sent: March 17, 2011 2:50 PM
To: Lorraine Royer
Subject: Press Release

Lorraine, below is the latest draft of the press release:

CONFIDENTIAL DRAFT (#3) – For Discussion Purposes Only

1. Williams Signs Long-Term Agreement to Produce 15,000 Bpd of Ethane/Ethylene for NOVA Chemicals
2. *Company to Expand Two Facilities in Alberta, Canada to Support Deal*
3. *New Production Adds to Existing NGL/Olefin Production in Canada of 14,000 Bpd*
4. TULSA, Okla. – Williams (NYSE: WMB) announced today that it has signed a long-term agreement to produce 15,000 barrels per day (bpd) of ethane and ethylene for NOVA Chemicals Corp. (NYSE, TSX: NCX) in Alberta, Canada.
5. Williams plans to invest CA\$311 million to expand its two primary facilities in Alberta to support the new agreement. The expansions, which are expected to begin operating in first-quarter 2013, will allow the company to produce ethane and ethylene from its operations that process off-gas from the Alberta oil sands.

1

2011-G-0021

Page 1

6. Fort McMurray, Redwater Facilities to be Expanded

7. The expansions involve modifying and upgrading two facilities. Williams will modify its oil sands off-gas extraction plant near Fort McMurray, Alberta, and construct a de-ethanizer at its Redwater natural gas liquids (NGL)/olefins fractionation facility near Edmonton, Alberta.
8. The upgrades at Fort McMurray will allow Williams to include ethane and ethylene in the NGL/olefins mixture that the company extracts from the off-gas and delivers to Redwater for fractionation.
9. The new de-ethanizer at Redwater will then enable Williams to produce approximately 15,000 bpd of an ethane/ethylene mix. This will add to its current production of approximately 14,000 bpd of a heavier NGL/olefins mixture that includes propane, propylene, butane, butylenes and condensate
10. Under the terms of the new customer agreement, Williams will deliver the newly produced ethane and ethylene to NOVA Chemicals' Joffre, Alberta, manufacturing facility, utilizing the Joffre Feedstock Pipeline.
11. "These expansions will add incremental ethane supplies in Alberta, which are high-demand products for the petrochemical industry in Canada," said Rory Miller, president of Williams' midstream business. "It's a significant growth opportunity for our Canadian midstream business, as we're uniquely positioned as the only company with off-gas experience and facilities in the region.
12. "The new operations will also further reduce greenhouse gas and sulphur dioxide emissions from the oil sands operations," Miller said.
13. The Government of Alberta recently modified the Incremental Ethane Extraction Program to provide incentives for the extraction of ethane from the oil sands in order to bring new supplies of secure, long-term ethane feedstock to Alberta's petrochemical industry.
14. <Quote from Ron Liepert, Alberta's Energy Minister - TBD>

15. Williams' Operations in Canada: Innovative Business, Emissions Reducer

16. When producers convert the Canadian oil sands into usable oil, the process produces an off-gas byproduct that includes a rich mixture of natural gas, NGLs and olefins. Williams pioneered the process of extracting the mixture from the off-gas at its Fort McMurray facility, which is located on-site at a third-party oil-sands production facility.
17. After it extracts the off-gas mixture, Williams returns the natural gas to the third-party oil-sands producer for its operations. It then transports the remaining NGL/olefins mixture to its Redwater facility outside of Edmonton.
18. At Redwater, Williams separates the NGL/olefins mixture into marketable products and removes the sulphurs. Currently, the facility produces the highest quality of propylene produced in Canada, as well as propane, butane, butylenes and condensate. When the expansions are placed into service, the facility will also produce ethane and ethylene.
19. Williams' off-gas processing reduces emissions of carbon dioxide (CO₂) — a greenhouse gas — in Alberta by approximately 200,000 tons each year and cuts emissions of sulphur dioxide (SO₂) — a contributor to acid rain — by more than 4,200 tons each year. The new expansions will further reduce both carbon dioxide and sulphur dioxide emissions in Alberta.

20. NGL Pipeline to Support Expansions

21. Williams is currently constructing a 261-mile (420 km), 12-inch NGL pipeline from its Fort McMurray extraction facility to its Redwater fractionator. The pipeline is designed to support the company's growing business in Canada.
22. The pipeline will have a capacity of 43,000 bpd of off-gas NGL/olefins and is expected to be placed into service in April 2012. The installation of additional pump stations in the future would enable Williams to increase capacity on the pipeline to 125,000 bpd.
23. [WMB boilerplate]
24. [WMB forward-looking statement]

David Chappell | Regional Vice President
Williams Energy Canada | Suite 600, 604 1st Street SW | Calgary, AB T2P 1M7
t: 403.444.5337
david.chappell@williams.com
www.williams.com/canada

Jay O'Neill

From: Jay O'Neill
Sent: March 21, 2011 8:28 AM
To: Tim Markle
Cc: Bob McManus
Subject: FW: Draft (confidential) Press Release

Tim: can you whip us up a quote for the releases below. Thanks. I'll take over today at lunch.

Thanks
Jay

From: Lorraine Royer [mailto:lroyer@globalpublic.com]
Sent: March 17, 2011 4:37 PM
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Jay O'Neill

From: Jay O'Neill
Sent: March 21, 2011 3:20 PM
To: Courtney Luimes
Subject: RE: Draft (confidential) Press Release

Perfect. You sending it back?

From: Courtney Luimes
Sent: March 21, 2011 3:19 PM
To: Jay O'Neill
Subject: RE: Draft (confidential) Press Release

He wants to use this instead:

"I'm pleased to see that Williams is the first of what I believe will be many companies to benefit from the recent changes to our ethane policy", said Alberta Energy Minister Ron Liepert. "The value-added industry in the province is important, allowing Albertans to get the most out of the provinces resources – whether in investment capital, exported products or jobs."

From: Jay O'Neill
Sent: March 21, 2011 9:57 AM
To: Courtney Luimes
Subject: RE: Draft (confidential) Press Release

How's this:

Alberta is committed to initiatives like this which support the ongoing success of the petrochemical industry", said Alberta Energy Minister Ron Liepert. "The value-added industry in the province is important, allowing Albertans to get the most out of the provinces resources – whether in investment capital, exported products or jobs."

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Sent: March 18, 2011 3:09 PM
To: Jay O'Neill
Subject: FW: Draft (confidential) Press Release

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