

# Petrochemicals Diversification Program

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The Petrochemicals Diversification Program (PDP) was created as part of the Alberta government's continued action to create jobs, attract investment and diversify Alberta's economy. It encourages companies to invest in the development of new Alberta petrochemical facilities by providing incentives through royalty credits.

Building on Alberta's large supply of natural gas and natural gas liquids, it capitalizes on the growing global demand for related higher value products and promotes greater energy processing in Alberta.

## Round One

In February 2016, the first round of the program was announced targeting methane and propane upgrading.

After a competitive application process, two projects were approved to receive up to \$500 million in royalty credits. These projects will capitalize on the abundance of propane available in the province to establish a propane-based value chain in Alberta, the first in Canada.

In December 2017, Inter Pipeline, based in Calgary, announced it had approved the construction of the company's proposed \$3.6 billion Heartland Petrochemical Complex. One of the facilities in this complex, the propane dehydrogenation plant, was approved to receive up to \$200 million in royalty credits under the PDP.

The other successful project, Canada Kuwait Petrochemical Corporation's propane dehydrogenation and polypropylene complex, is a \$4 billion project that is expected to make a final investment decision in early 2019.



*A design rendering of the future Inter Pipeline Industrial Heartland Petrochemical Complex.*

## Round Two

As part of the Alberta government's response to the report from the [Energy Diversification Advisory Committee](#), a second round of the program would move forward with \$1.1 billion available in royalty credits.

This second round is similar to the first, with one major change:

- Broadening the scope of the program to include ethane in addition to methane and propane.

The PDP and feedstock infrastructure program are complementary in that investments in new ethane processing will likely require investments in new ethane supply in Alberta. This is because Alberta's ethane supply and demand is currently balanced.

This change is designed to expand Alberta's petrochemical sector, increase the supply of natural gas liquids to encourage investment in additional petrochemical processing and, ultimately, diversify Alberta's energy sector.

## The Market

Alberta's natural gas industry competes with a flourishing, export-oriented industry in the United States. Alberta can get its gas to market through petrochemical processing to create value-added products for export. This comes with new investment and new jobs in Alberta. Demand for petrochemical products continues to grow globally.

There is intense worldwide competition to attract petrochemical investment because of the large economic benefits. Governments around the world, including along the Gulf Coast in the United States, routinely offer aggressive incentives to companies considering new projects in their jurisdictions.

Other Canadian provinces including Ontario and Quebec also offer generous incentives to attract these large investments and new jobs. In order for Alberta to remain competitive on the global stage, the Petrochemicals Diversification Program is an important step forward.

## Royalty Credits

While petrochemical facilities do not directly benefit from royalty credits as they do not pay royalties, the credits earned can be traded to an oil or natural gas producer. This producer could use these credits to reduce its royalty payments to offset the cost of extracting natural gas and oil.

There is no upfront cost to taxpayers and no credits are awarded to the companies until the successful petrochemical plants are built and operational.

## Including Ethane

Including facilities that use ethane in this round of the PDP makes it possible for applications that would include the construction of a new ethane cracker, or the expansion of an existing cracker.

Alberta is already home to four ethane crackers. These are large-scale, complex petrochemical facilities that convert raw ethane into ethylene by heating the gas with steam to a temperature of roughly 850 degrees Celsius for only a few seconds or even milliseconds. This breaks down the gas into other components.

## What is Ethane? How is it Used?

Ethane is a colourless, odourless gas that is the second-most common component of natural gas after methane. It is used in a variety of ways, often to make ethylene, which is used in plastics manufacturing, detergents, lubricants and many other applications.

According to the [Energy Diversification Advisory Committee](#) report, converting ethane to ethylene leads to further downstream production, primarily polyethylene, followed by ethylene glycol.

Building an ethane cracker and associated derivatives facilities would result in a substantial increase in exports once operating. Demand for ethylene polymers, common in the manufacturing of consumer products, is growing rapidly in China amongst other markets.

Ethane-based petrochemicals also provide opportunities for local companies to access ethane derivatives for additional downstream value-added processing into intermediate chemicals, industrial goods, and consumer products.

## Benefits to Alberta

According to the Chemistry Industry Association of Canada, Alberta's chemical sector employs over 7,500 people directly, with an average salary of over \$90,000 per year. Exports are valued at \$8.2 billion, the largest exporting sector in manufacturing industries in Alberta.

This new round of the PDP is expected see similar results to the first round, which had applications worth a collective \$20 billion in private investment. The construction of new petrochemical manufacturing facilities will create thousands of construction jobs and hundreds in operations later.

Processing Alberta's natural gas into a wide variety of in-demand consumer products substantially increases the value of the raw resources and allows Alberta to get the most out of it – whether through investment capital, jobs, increased economic activity, or exports.

Natural gas is one of the cleanest, safest and most useful forms of hydrocarbons in our day-to-day lives. Natural gas is a fossil fuel and a mixture of hydrocarbons. The majority of natural gas is methane, but it also contains other components such as ethane and propane.

These components form the ingredients for petrochemical processing and are the building blocks for products that enable modern life, such as: plastics, anti-freeze, fertilizers, fabrics, solar panels, children's toys, food preservatives, DVD players and many more products.