

2019-2020 Research Projects

Updated July 2020

1. Economic Impacts of Oil Sands Production in the Canadian and US Economies

As part of an annual update, a forecast of the production of oil sands bitumen and Synthetic Crude Oil will be conducted for 2019-2039. Production costs and supply forecasts will be developed. The study will include an economic impact analysis, job impacts will also be forecast for Canada and the US. This project will include a detailed assessment of well costs and a GHG emissions forecast.

Anticipated Release: July 2020

2. Economic Impacts of Canadian Conventional Oil and Gas Production in the Canadian and US Economies

As part of an annual update, a forecast of the production of conventional oil and gas production will be conducted for 2019-2039. This will include onshore and offshore activities as well as emerging oil and gas plays. The research will update the production costs and production forecast, economic impact analysis using CERI's Input/Output model for Canadian and the U.S. GHG emissions will also be forecast as will Canadian and US job impacts. This project will include a detailed assessment of well costs.

Anticipated Release: July 2020

3. Opportunities and Challenges for Distributed Electricity Generation in Canada

This project will consider the issue of distributed generation as it impacts on the operation of electricity grids and investment requirements for electricity distribution systems in Canada. Distributed options such as combined heat and power, self-generation and energy cooperatives will be reviewed to determine how these technologies will impact the cost and reliability of grid operations. Different business models will also be considered including gross and net metering and how those models impact monopoly service providers.

Study Released: July 2020

4. Economic Impacts of Value-added Uses of Oil and Natural Gas

Value-added activities for oil and natural gas, including petrochemical activities, are limited in Canada compared to other jurisdictions. This project will assess the economic and environmental impacts of different value-added products to the Canadian economy. The focus will be on those provincial economies where oil and gas represent greater than 10% of the economy (Alberta & Newfoundland).

Anticipated Release: June 2020

5. The Economic Effectiveness of Different Carbon Pricing Options to Reduce Carbon Dioxide Emissions

This project will test the assumption that pricing carbon emissions is an effective way of reducing them. There are numerous examples of carbon pricing from a simple tax (wholesale, retail or both) to a cap and trade system. Different governments have used different designs which include credits and redistribution of the cost impacts. CERI intends to review the multiple designs that have been implemented globally to see if it can be demonstrated which design is the most effective in terms of reducing emissions at the lowest cost.

Anticipated Release: June 2020

6. Ribbons of Steel 2: Ensuring an Economic Future for Petrochemicals and Petroleum Fuels

Rail has been a vital link for commerce since the Canadian Confederation. We are reminded of its importance every time there is a service disruption either due to accidents, labour issues, weather or civil protests. CERI has completed a detailed review of how rail impacts Canada's crude and petrochemicals markets. One of the main objectives of this study was to determine the makeup of commodities currently transported by the rail system in Canada. This information, combined with a perspective of future growth or decline on a commodity by commodity basis, allowed CERI to establish a future view of the commodities that could be moving on the rail system in 2025, with a focus on petrochemicals and petroleum products, including crude oil.

The study also outlines the Canadian rail-based supply chain, including shippers, terminal operators, and ports, since the performance of the system can be affected by any stakeholders involved in the movement or handling of rail freight traffic. For the 2019-2025 period, on average, the fuel oils and crude petroleum and plastic and

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chemical products rail traffic will increase by 1.7 percent and 1.9 percent, respectively. In the case of all three oil pipelines currently under construction being completed, the crude and other fuels transported on rail would grow from 280,000 bpd in 2019 to 360,000 bpd by 2025. In a scenario where none of these pipelines are operational, the crude fuel volume is expected to reach almost 1.4 million bpd by 2025.

Alberta's Industrial Heartland (AIH) is presented in this report as a case study to analyze the rail transport of petrochemical and chemical products, and fuel oil and crude petroleum. Fuel oils and crude petroleum and plastic and chemical products are considered the two major transported commodities from Alberta, and by inference, from the AIH. Shippers and the railways are currently working together to assess growth projections and ensure adequate capacity is available for future freight tonnage in the region. CERI's investment model estimated that an additional investment of \$339.2 million would be needed in the AIH to accommodate new facilities that will become operational in this period. As a result of additional investment, the AIH region will see further economic benefits from the spin-offs of this investment. The GDP impact is measured to be almost \$6.7 billion over the six years, more than a 10-fold impact.

Rail system expected growth (includes all major sector shippers) results in need annual capital investment of \$2.5 billion in 2019, growing to \$4 billion in 2020 and reaching almost \$5.3 billion by 2025. This represents a 26 percent growth in the short term from 2020 to 2025. It should be noted that these observations are based on a business as usual scenario and do not include the impact associated with the Covid-19 pandemic.

Study Released: April 2020

7. Industrial Competitiveness, Productivity and Energy Efficiency

This project will assess the economic impacts associated with energy efficiency projects as they relate to system planning requirements for electricity and natural gas generation, transmission, and distribution systems. Considering the energy requirements for the top 5 industries in each province, CERI will evaluate the cost, emissions and energy system impacts of energy efficiency investments. These investments will have a variety of impacts including potentially increased labour, changes to the demand for electricity, oil and gas, and competitiveness with other countries and within Canada. Key questions that will be explored include:

- Energy efficiency investments compared to fuel switching

- How efficiency investments can lead to reductions in CO2 emissions, and how that impact changes by province.
- How efficiency investments support the lowering of production costs and costs associated with carbon pricing
- The effect of efficiency investments on direct and indirect job creation, their linkage to the local job markets and the sustainability of these jobs
- The effectiveness of different program delivery mechanisms: codes, incentives, marketing, and training.

Study Released: March 2020

8. Competitiveness of the Canadian Regulatory Structure for the Oil and Gas Sector

Oil and gas production and transport are major considerations when determining how to combat climate change. It is also an important sector of the economy which brings with it concerns related to construction activities, health and safety and environmental stewardship. This study will consider the different environmental, social and economic regulations and their individual and cumulative costs and benefits on society and the sector. This project will review different policies implemented federally and by provincial or territorial jurisdictions. It will consider their stated objectives and provide a valuation of those goals and a valuation of the impact on the sector. This study will also consider similar regulations of US jurisdictions in that competitive analysis and assess how export-exposed industries might be affected and whether “carbon leakage” should be a consideration.

Study Released: March 2020

Ongoing Research:

1. Maintenance of CERI Models and Programs

Ongoing maintenance and upgrading of CERI computer models and programs

2. Maintenance of CERI Databases

Ongoing maintenance and upgrading of CERI databases

3. Natural Gas Report

Research and updating of CERI's quarterly report, the results of which are used in other ongoing projects

4. Oil Report

Research and updating of CERI's quarterly report, the results of which are used in other ongoing projects

5. Electricity Report

Research and updating of CERI's quarterly report, the results of which are used in other ongoing projects

6. Geopolitics of Energy

Geopolitics of Energy (GOE) is the monthly journal on geopolitical developments affecting global energy markets. It provides analysis, information, perspectives, and fresh ideas on the political and economic factors affecting energy and their impact on national energy policies, the international environment, and prices.