



Ontario Power Generation

Economic Impact Analysis of Small Modular Reactors (SMRs)

Presented to
Ontario Power Generation (OPG)

Prepared by
The Conference Board of Canada

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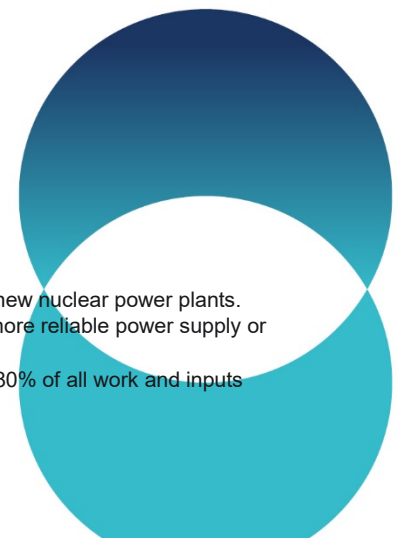
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Key findings

- The construction and operation and maintenance of four new nuclear Small Modular Reactor (SMR) plants will have a significant economic impact on the Ontarian and Canadian economy.
- Deployment of four SMR nuclear power plants is expected to increase Canadian GDP \$15.3 billion (2019 dollars) over 65 years.
- Over the next 65 years, the four SMR nuclear plants assessed is expected to sustain, on average, approximately 2,000 jobs per year.¹
- This corresponds to, nearly \$3.8 billion increase in GDP and 500 jobs per year over the same time period by SMR.
- The economic impact, or the ratio of increased GDP to spending (the “economic multiplier”) is 0.82 – each dollar spent would increase Canadian GDP by \$0.82 across the total lifespan of the technologies.
- Economic impact is mainly driven by the ability to source work and inputs locally. All else being equal, the economic impact is larger if more work and materials are sourced from within Canada.²

¹ These employment benefits include the direct, indirect, and induced effects from investing in the new nuclear power plants. However, the employment gains do not account for the positive economic impact associated with more reliable power supply or the potentially overall lower price of electricity.

² Based on figures provided by OPG, this analysis assumes a localization of 80%. In other words, 80% of all work and inputs are sourced within Ontario.



Introduction

Nuclear energy has long been a significant source of electricity generation in Ontario, accounting for 61 per cent of Ontario's power on average over the last five years. There is now an increasing need for investing in stable and reliable energy resources, such as commercial-scale Small Modular Reactor (SMR) technology. The deployment of more nuclear power in Ontario is a major investment decision. It is therefore important to understand the potential economic benefits for the province and the country of investing in new nuclear power generation. To that end, the Conference Board of Canada (CBoC) has partnered with Ontario Power Generation (OPG) to analyze the economic impact and fiscal benefits across four SMRs within Ontario.

The analysis results show that investment in four SMRs within Ontario is expected to sustain, on average, approximately 2,000 jobs on average per year over the next 65 years. Over that time, Canadian Gross Domestic Product (GDP) generated from the investments is expected to be approximately \$15.3 billion in 2019 dollars. Likewise, the amount of tax revenues accruing to all levels of government is expected to be approximately \$4.9 billion over the next 65 years. Lastly, an economic multiplier of 0.82 suggests that each dollar spent would increase Canadian GDP by \$0.82 across the total lifespan of the technologies.

The Economic Impact Assessment (EIA) proceeds as follows. We first provide our findings in the Results section, including a table with the projections from CBoC's EIA model, followed by a discussion of the results. In the Conclusion section, we summarize some of our findings and offer some important takeaways from the research conducted.

Results

Table 1 presents the main results of the EIA model throughout all phases of deployment. Within Ontario, the estimated total increase in GDP is approximately \$13.7 billion. Across designs, Ontario accounts for about 89% of the economic benefit, with the remaining 11% of domestic economic gain spread across other provinces and territories. The expected number of jobs created is approximately 113,161 provincially and 128,431 nationally. Lastly, an increase in taxes collected are estimated to be \$4.4 billion provincially and \$4.9 billion nationally.

Table 1

Economic impact of all phases by design
(2019 CAD\$ Billions, jobs/year)

All Phases – GDP (billions)		
GDP	ON	Total
Direct	7.00	7.00
Indirect	4.14	5.07
Induced	2.53	3.24
Total	13.69	15.31
Economic Multiplier (%)	—	82%

All Phases – Employment (billions)		
Employment (year-jobs)	ON	Total
Direct	49,364	49,364
Indirect	38,519	46,296
Induced	25,278	32,771
Total	113,161	128,431
Economic Multiplier (%)	49,364	49,364

All Phases – Taxes (billions)		
Taxes	ON	Total
Direct	2.53	2.53
Indirect	1.10	1.39
Induced	0.77	0.98
Total	4.40	4.90
Economic Multiplier (%)	2.53	2.53

Source: The Conference Board of Canada

In terms of employment, on average, 2,000 jobs per year over approximately 65 years will be created across Canada as a result of this new economic activity. The GDP impact, discounted for inflation and expressed in 2019 Canadian dollars, is projected to be approximately \$15.3 billion. Likewise, the amount of tax revenues accruing to all levels of government is expected to be approximately \$4.9 billion over 65 years.

The economic multiplier is calculated as a ratio between the total GDP impact over the total cost measured in 2019 Canadian dollars. A higher economic multiplier implies a greater economic impact on the Ontarian and Canadian economy for a given level of spending. The overall economic multiplier is 0.82, suggesting over the total lifespan of the technologies, each dollar spent would increase Canadian GDP by \$0.82, with the majority of that gain (89 per cent) being realized in Ontario.

When considering how high the multipliers should be, it is important to note the distinction between GDP (used in our multiplier definition) and gross economic output. GDP captures the growth of final consumption of goods and services and as such avoids double counting intermediate goods and services which are both an output for the seller and an input for the buyer. Thus, a multiplier below 1 should not be misinterpreted as a reduction of value – any multiplier above zero represents a net economic gain.³

Conclusion

Overall, we project that the deployment four SMRs in Ontario will generate, on average, 2,000 jobs per year over 65 years and approximately \$15.3 billion in GDP over that time. For every dollar invested in these four SMRs, an estimated \$0.82 in GDP will be generated.

³ Most recently CBoC was also tasked with estimating the economic impact of Pickering nuclear generating station refurbishment. While both studies differ in their mapping, scope and assumptions regarding localization, their economic multipliers have been computed the same way. As a point of comparison, the economic multiplier associated with Pickering refurbishment is 0.74.

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