



# International Union of Operating Engineers

AFFILIATED WITH THE AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

## Submission to SRSR

Study on Small Modular Nuclear Reactors

## OVERVIEW

The International Union of Operating Engineers (“IUOE”) is a progressive and diversified trade union representing workers in numerous occupational categories. In every province and territory, our members build Canada’s infrastructure and have been involved in the production of Canada’s resources and delivery of its critical healthcare and community services since 1896. Our members construct and shape the skylines of Canada—we are the specialists that build roads, schools, hospitals, pipelines, solar and wind farms, and more. We have proudly served Canada’s nuclear sector and are committed to small modular reactors (“SMRs”) as a source of clean, safe, and affordable energy.

We believe the opportunities provided by SMRs far outweigh any of the concerns expressed by others with the technology. For us, some of the standout opportunities given in this submission highlight the importance of SMRs to workers, the economy, and climate action. These opportunities are by no means an exhaustive list of the positive impacts from SMRs for Canada but do represent areas we view as critical to developing Canada’s workforce, growing the economy, and protecting the natural environment.

The construction, manufacturing, and distribution of SMRs will provide employment opportunities for Canadian workers, including women, Indigenous peoples, and visible minorities. SMRs have the potential to support thousands of highly-skilled Canadian tradespeople through apprenticeship training and employment not only today, but to also provide avenues for future opportunities. SMRs provide the “like-for-like” jobs needed for workers transitioning from industries, such as oil and gas.

Economically, SMRs not only serve as a critical source of employment, especially for those workers in the transition to a low-carbon economy, but also have many spinoff opportunities for the communities in which they would be built, and as a new source of revenue for provinces and territories. SMRs can be used to strengthen and safeguard our power grid. If Canada is successful at being among the first countries to develop and construct SMRs, there is an advantage through our existing, comprehensive trade networks to become a leader in supplying clean power to the world.

These modular, modern, readily deployable reactors can provide clean, cost-efficient energy anywhere in the world, and could be a significant answer to reducing GHG emissions domestically and abroad. They could also be a significant factor in the production of green energy by providing supplemental base load power to other intermittent sources of green energy, such as wind and solar. Further, SMRs could indeed be a primary energy source and act as replacements for coal and diesel-powered generators, especially for remote and Northern communities.

## **OPPORTUNITIES FOR WORKERS**

For many hardworking Canadians, employment in the trades provides the stability, security, skills, and salary they need to be successful. Highly trained with qualified transferable skills, these workers are adaptable, experienced, and prepared to take on any challenge made available to them. Their work helps to build the backbone of Canada's economic infrastructure, from roads and highways to nuclear power generating facilities and wind turbines.

Our economy is built on natural resources. In 2020, oil and gas represented around \$105 billion of Canada's GDP, yet also accounted for a significant portion of the country's GHG emissions. In the years to come, as Canada shifts towards net-zero emissions solutions, while still meeting the growing demand for energy, we will need to transition to clean energy options which provide hardworking Canadian tradespeople with meaningful and comparable employment to the jobs currently available in oil and gas.

According to the Canadian Climate Institute, there are over 800,000 workers in transition-vulnerable sectors and dozens of transition-vulnerable communities, depending on businesses and governments to limit job loss and accelerate job creation. About half of workers who have been displaced from oil and gas extraction have experienced at least a 30% drop in earnings in the short term. A significant proportion of workers displaced from the oil and gas industry experience earnings declines five years after job loss.

The job opportunities made available to displaced workers, especially in the oil and gas sector, must be appealing and comparable. Unfortunately, many green jobs do not offer similar benefits. Communities dependent on oil and gas also suffer as they're unable to attract investment in renewables or go from having projects which utilize a high number of workers to projects that require fewer workers. The Government must invest in green jobs which provide long-term employment and comparable benefits.

Nuclear power, through the development of SMRs can be a means to support workers displaced from the oil and gas sector. SMRs can provide for thousands of highly skilled jobs while also helping to reduce emissions levels in oilsands production. Workers and their families deserve to feel confident about a clean energy shift that does not come at their expense. There are currently limited avenues for oil and gas workers to transition to comparable and meaningful jobs in the clean energy sector without nuclear, through SMRs, being included as part of the mix.

At the same time, Canada is also facing a skilled labour shortage. According to BuildForce Canada, 156,000 individuals are expected to retire by 2027; Canada will need to recruit an estimated 171,850

workers by the same year to meet an increasing demand for skilled labour in the skilled trades. To tackle the labour shortage Canada must encourage diversity and inclusion. We, along with our partners in the Building Trades, have been doing work in diversity and inclusion for decades, including identifying and addressing barriers to recruitment and retention of underrepresented groups.

The nuclear sector has been crucial to providing job opportunities for women and other underrepresented groups, and the commitments made by SMR developers on their engagement with women, Indigenous groups, and visible minorities reaffirms how vital the sector has been to expanding opportunities for diversity and inclusion in the skilled trades. From our point of view, SMRs provide an opportunity for Canada to further this goal, and its support for workforce development and community benefits would prove valuable to promoting and expanding the skilled trades among underrepresented groups.

## **OPPORTUNITIES FOR THE ECONOMY**

We recognize, also, the many spinoff opportunities for the economy that can be created through the development and export of SMRs. For instance, in New Brunswick, the Port of Belledune can be converted off the export of coal to the export of SMR components and modules. The steam produced by SMRs can be used for ammonia and hydrogen production. They can help enable the broader deployment of renewables that are dependent on weather, such as solar and wind, and can provide a new, substantial source of revenue for provinces in royalties and from trade, domestically and abroad. The employment opportunities provided by these, and other spinoff activities would be a benefit for Canadian workers.

Several provinces across Canada have shown keen interest in participating in the development of SMR technologies, including Alberta, Ontario, New Brunswick, and Saskatchewan, among others, with consideration that SMRs will not only help to revitalize their economies, but also provide a source of clean, safe, and affordable energy. These provinces, especially Ontario and New Brunswick, have the infrastructure and workforce in place to support SMRs.

SMRs would be crucial in promoting clean energy in Canada's North and in industrial activities, such as mining. The versatility of SMRs can provide power and increase energy efficiency in remote communities, especially in vulnerable Arctic environments. Further, as a source of affordable, low-carbon emitting energy, SMRs could be deployed to power communities in the North for decades with low maintenance and upkeep.

According to Statistics Canada, nearly all power generation in Canada's North is through diesel, making up over half of all diesel usage nation-wide. SMRs have the potential to reduce the reliance on diesel and coal-fired power generation, especially in Nunavut which is entirely off-grid and reliant on diesel. Resource development in the North would benefit from SMRs as a responsible, sustainable source of power generation for their facilities and operations.

SMRs would also benefit and strengthen our power grid. According to SNC Lavalin, Canada will require about 1000 TWh/year on top of the existing demand of 500 TWh/year by 2050 because of increasing electrification demand. Alberta, Saskatchewan, Nova Scotia, New Brunswick face an even greater challenge, as the transition toward clean power generation mix by 2050 would require a major shift in their energy supply technologies. Achieving net zero carbon emissions by 2050 requires tripling Canada's energy generation capacity over the next 30 years. This is in addition to the replacement capacity required for coal and gas plants and nuclear facilities at their end-of life.

Canada faces the unenviable position where it needs to shift to other sources of energy while at the same time account for a growing demand for electricity. Growing our capacity for clean electricity will be a key element to Canada's goal of reaching net-zero emissions by 2050. According to the International Energy Agency ("IEA"), without nuclear investment, achieving a sustainable energy system would be much harder, emissions would continue to rise at an extraordinary rate, electricity systems would become less flexible, and renewables harder to justify given their upfront costs and capacities. Grid stability requires baseload generation with ability to follow load when intermittent generation by solar and wind are unavailable. Taking nuclear out of the equation would result in higher electricity prices for consumers and increase the likelihood Canada would fail to contain its emissions and support workers transitioning from fossil fuel jobs.

Our electrical grid is also more vulnerable than ever with the increase in climate disaster events, our aging electrical infrastructure, and the overextension of existing sources of power. If Canada is to adapt to changing circumstances negatively impacting our electrical grid, while at the same time aiming to be self-sufficient, we will need to embrace all available options. Nuclear is one of those options, if not the key option. It is clean, its carbon footprint is minimal, it has a high energy density for cost, it's reliable, it's stable, and advancements in the last 50 years continue to make it a safer, less risky alternative to other sources of energy. As the culmination of those advancements, SMRs would be the piece of the puzzle Canada needs to expand and protect the power grid, while at the same time fighting climate change and growing the economy.

## OPPORTUNITIES FOR CLIMATE ACTION

Canada's 2050 net-zero target will require immediate, concerted action and investment to be achievable. Canada will need to triple power production levels, with forecasts showing demand growing three-fold by 2050. Investments in solutions are needed in every area of low carbon energy production – nuclear, hydro, hydrogen, etc. Power grid reliability, resiliency, and effectiveness is key, which includes building and upgrading the electrical grid.

This is a monumental task which will require team effort by governments and stakeholders across industry and labour to ensure that Canada will be successful in leveraging low-emitting energy sources to the benefit of Canadian workers and the climate. We will need nuclear energy to achieve this goal. There is no viable model for a transition to net-zero emissions without nuclear; it is the most reliable, energy-dense, and clean form of energy currently available to us. It provides the most stable, wealth-generating employment and career-advancing opportunities in the clean energy sector, allowing for the transfer of “like-for-like” jobs from the fossil fuel sector to clean energy as a part of a Just Transition framework.

SMRs can contribute to Canada's net-zero emission goals as follows:

- Generate clean, reliable and affordable electricity to replace fossil fuels;
- Generate carbon-free electricity and process heat to create other important clean energy sources, such as hydrogen, ammonia and other clean fuel sources;
- Enable broader deployment of intermittent renewables dependent on weather, such as wind and solar, through the ability to follow grid load requirements with a 90% availability rate;
- Provide clean energy to clusters of remote communities and industry in remote areas currently relying on diesel-fuelled generation;
- And, directly reduce GHG emissions by up to 370MT through on-grid electrical production alone by 2050 excluding additional reductions from clean fuels in transportation and new renewables.

SMRs would help the Government of Canada meet its environmental commitments in the oil and gas sector, while at the same time ensure that the sector continues to grow and export oil and gas to market. By installing a SMR in Fort McMurray, the environmental impact of the oilsands would be greatly reduced. Under a net-zero scenario, modelling by Pollution Probe projects that the deployment of SMRs could grow rapidly in the oil sands and manufacturing sectors. By 2050, SMRs could account for a large majority of the heat supply for petroleum refining, steel, and biofuels manufacturing, as well as a significant portion for manufacturing and mining. As noted by the International Atomic Energy Agency (“IAEA”), nuclear power is well suited to decarbonizing both

electricity and heat production, and it can also produce low carbon hydrogen on a massive scale and at an increasingly competitive cost.

Studies by organizations such as the Columbia Centre on Global Energy Policy have shown that approximately 40% of industrial emissions result from burning fossil fuels to produce high-quality heat, and that SMRs are among a small number of low-carbon technologies that can provide high-grade heat to industry. In 2016, Canada had more than 200 mines and 7,000 quarries, producing minerals and metals worth more than \$41 billion. Among them, 32 operating and planned off-grid mines were reliant on diesel generators. On average, the off-grid mines had power demands of between 5-30 MW. One feasibility study concluded that very small modular reactors (roughly 10 MW in electricity generation) could provide 90% of these mines' energy needs, with an 85% reduction in GHG emissions.

If we are to successfully fight climate change, strengthen the nation's energy security, and ensure the prosperity of Canadian tradespeople, industry, labour, and government must work in tandem to leverage Canada's world class nuclear industry to achieve a net-zero future and a transition to a low-carbon economy which benefits all working Canadians.

## **CONCLUDING REMARKS**

The International Union of Operating Engineers appreciates this committee's study on SMRs and for allowing us to submit our paper. We are willing to meet with any members to discuss our paper. We are eager to continue providing input on this important issue, particularly if the Government seeks advice on adopting and implementing measures to support and invest in the development of SMRs, and the employment of Canadian workers on SMR projects. We have nuclear ready workers who have the skills and training needed to work to develop and construct SMRs.

From our perspective, Canada has the key components to make SMRs a success: a skilled workforce, including trades and engineering; the ability to supply and procure materials and components; and ready access to shipping for exports. Success will depend upon the timely development and deployment of the infrastructure needed to support the technology, and the need to ensure that SMR projects are supported by all levels of government and are fully funded.

We recognize the important role SMRs can have in the acceleration towards a low-carbon future in Canada. We are committed to working towards transitioning the fossil fuel-related jobs of today to clean energy jobs of tomorrow. SMR technology will help to achieve that goal. This is on top of all the other benefits SMRs will provide Canada with growing the economy and protecting the environment.