



# NAYGN Canada

# Written Intervention

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**SCOPE OF THE ENVIRONMENTAL ASSESSMENT FOR THE  
GLOBAL FIRST POWER MICRO MODULAR REACTOR (MMR)  
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Matthew Mairinger, for the record.

I would like to start by thanking the Canadian Nuclear Safety Commission (CNSC) for providing an opportunity to submit a written intervention on the proposed scope of factors to be considered in the conduct of an environmental assessment (EA) for the Micro Modular Reactor (MMR) project proposed by Global First Power (GFP). I have seven years of experience working for Ontario Power Generation at both the Pickering and Darlington nuclear sites. I have worked in Project Controls, Minor Modifications, Reactor Safety, Stakeholder Relations, and I currently work in Performance Engineering at Darlington. I earned my Bachelor of Engineering degree in Nuclear Engineering from the University of Ontario Institute of Technology and am a Professional Engineer in the province of Ontario.

I am here representing North America Young Generation in Nuclear (NAYGN) as the NAYGN Canadian Operating Officer. [NAYGN](#) is an association of young professionals and students passionate about the nuclear industry and is focused on professional development, public relations, networking, and community outreach. There are currently over 100 chapters across North America with 13 chapters in Canada.

Under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) the environment means the components of the Earth including land, water, air (including all layers of the atmosphere) as well as all organic and inorganic matter and living organisms and the interacting natural systems that include components of the aforementioned. I mention this since the environmental assessment deals with the environmental effects of the proposal on this full definition of the environment as outlined in the Act and through my intervention I will make reference to this classification.

The purpose of the Act in section 4 (f) states that it is “to ensure that an environmental assessment is completed in a timely manner”. The reality of today's world has temperatures rising and emissions out of control. The EA should be completed thoroughly according to the regulations and should follow the

scientific process. I fear that anti-nuclear groups may ask for requests above and beyond scientific EA requirements with the intent to needlessly delay the project. Meanwhile, air pollution is estimated to kill seven million people worldwide every year and already the global average atmospheric carbon dioxide is over 400 parts per million. This is the current situation, this is the reality we have. These dangers should be kept front of mind when thinking of “nice to have” or “above and beyond” additions to the EA when we evaluate this plan.

The purpose of the Act in section 4 (h) states that it is “to encourage federal authorities to take actions that promote sustainable development in order to achieve or maintain a healthy environment and healthy economy”. The MMR project has a design with passive and inherent safety which means that there is only a minimal Emergency Planning Zone. Having a minimal Emergency Planning zone will allow the natural environment to flourish around the project. The high energy density within the fuel will again minimize disturbing or impacting flora and fauna when compared with alternate energy sources which requires far greater land use. The use of cladding the uranium in silicon carbide (similar to TRISO) also allows the fuel to remain safe and undamaged under all operating and postulated accident conditions, and using the FCM fuel also offers enhanced proliferation resistance. Another benefit of this project proposal is the use of fuel that lasts the lifetime of the reactor. Having the fuel secured within the reactor for the entire duration is an advantage of generating energy using technologies requiring frequent refuelling strategies (such as coal, biomass, and gas) which disturbs the local environment through transportation emissions and noise. Since the project reactor does not use water as a coolant the local marine life can remain undisturbed.

The MMR operates at a higher temperature nuclear fission compared to existing reactors. This will allow the MMR to be utilized for process heat and for hydrogen production. These additional features should be strongly considered when looking at the benefits the MMR provides to the economy and the environment. We must look at the lifecycle environmental and economic costs of alternatives when

evaluating this EA. If renewables are being used for a comparison the backup supply (gas/batteries) should be considered using their capacity factors, methane gas leakage numbers for natural gas production, the quantity of natural resources required, and the disposal impact at the end of the technology.

What this project proposal really offers is an economic and environmental benefit not only to the project site but also opens the door to be deployed throughout Canada and internationally. This expansion could be the solution for off-grid mines and remote communities to replace their current diesel generating sources with clean, safe and reliable nuclear power.

In closing, I truly believe that nuclear power is the safest, cleanest, and most reliable electricity production method that should be one of the main strategies humanity utilizes to combat climate change and protect the environment. This project proposal has design features which go above and beyond safety requirements, has a reduced environmental impact compared with traditional large scale nuclear, and offers additional opportunities with district heating and hydrogen production. As a young professional that is passionate about the well-being of our environment for generations to come, I urge you to take this crucial step in progressing this proposal, do it for the planet!

Thank you.



Matthew Mairinger