



environmental
defence
INSPIRING CHANGE

July 13, 2022

Impact Assessment Agency of Canada

22nd Floor, Place Bell
160 Elgin Street
Ottawa ON K1A 0H3

**Re: Comments on the Initial Project Description for the Gas Plant Project,
IAAC File Number 83696**

We are writing to provide comments on the initial project description for the so-called Hydrogen Ready Power Plant Project.

Environmental Defence strongly urges the Minister of the Environment to exercise his discretion under s. 17 of the *Impact Assessment Act* to reject the project as soon as possible on the basis that it will cause unacceptable environmental impacts within federal jurisdiction. According to the proponent's own overly optimistic calculations, the project will generate over 2 million tonnes of carbon emissions (CO₂ equivalent) between 2035 and 2040, which is contrary to the federal government's commitment to achieve net-zero carbon emissions by 2035. The actual emissions will be far higher when realistic fuel mix assumptions are used and upstream emissions are counted.¹ The project is completely inconsistent with Canada's target and commitment to achieve net-zero electricity generation by 2035, Canada's 2030 Emissions Reduction Plan, and the binding carbon targets under the *Canadian Net-Zero Emissions Accountability Act* and Canada's international agreements.

If the Minister is not prepared to reject the project at this stage, Environmental Defence strongly urges the Impact Assessment Agency of Canada (the "Agency") to decide that an impact assessment is required under s. 16 of the *Impact Assessment Act*. In addition to the major adverse climate impacts, an appropriate assessment of endangered species and migratory birds is required due to the proximity to an

¹ For details, see below under the heading "climate impacts."

important wetland, the provincially designated and protected Bickford Oak Woods Conservation Reserve, and other valuable environmental features.

If an impact assessment is conducted, we urge the Agency to develop a robust draft of the Tailored Impact Statement Guidelines. We have included a preliminary list of factors that we believe should be included. Although this list is by no means exhaustive and we understand that we will have an opportunity to comment on the draft at a future stage, it may be helpful for the Agency to receive these preliminary comments now for it to consider going forward.

Unacceptable adverse impacts within federal jurisdiction

This project will cause unacceptable adverse impacts within federal jurisdiction.

Climate impacts

The proposed project is a gas plant. Naming it the “hydrogen ready power plant project” gives an inaccurate impression that this project has low carbon emissions when it does not. The proposed plant could use *up to* 65% hydrogen. However, it is more likely to use 100% or nearly 100% methane gas for the foreseeable future as would any other gas plant. Indeed, even according to the initial project description, the project is not projected to use 100% hydrogen until 2050, just as the plant reaches the end of its predicted 25-year lifespan. In addition, the project does not include a commitment to use or generate “green” hydrogen, and therefore fossil-fuel derived hydrogen would likely be used, which would likely *increase* the overall GHG emissions compared to a standard gas plant.

According to the proponent’s own initial project description, the project will generate 4,295,783 tonnes of net greenhouse gas (“GHG”) emissions (CO₂e) over its lifetime.² That is equivalent to the carbon emissions of 925,609 gasoline-powered vehicles driven for a year.³ This includes 334,437 t CO₂e per year *after* 2035, the year Canada has committed to achieve net-zero electricity generation.⁴ Indeed, between 2035 and 2040, the proponent estimates that the project will generate 2,006,622 t CO₂e, nearly half of the net emissions over its lifetime. Even based on

² Initial Project Description, p. 39.

³ Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator ([link](#)).

⁴ Canada, *2030 Emissions Reduction Plan*, 2022 ([link](#)), p. 40.

the proponent's own calculations, the project will have major climate impacts and is inconsistent with Canada climate commitments and its 2030 Emissions Reduction Plan.

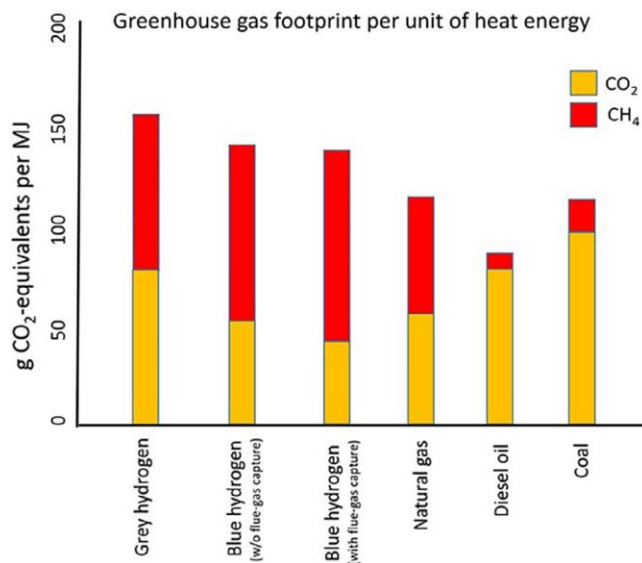
However, the initial project description grossly underestimates the potential adverse GHG emissions impacts. The draft technical guidelines require proponents to calculate the "maximum" GHG impacts.⁵ In addition, this Agency is required by law to apply the precautionary principle.⁶ Contrary to these requirements, the proponent has calculated the net GHG emissions based on optimistic inputs that are inconsistent with reality. For instance:

- **Use of hydrogen:** The proponent assumes the plant will use 20% hydrogen by 2031 and 65% by 2041. There is no justification in the initial project description for this assumption and the proponent has made no commitments in this regard. Furthermore, there are strong reasons to believe that this level of blending will not come to pass due to the high cost of hydrogen, the high lifecycle GHG emissions from fossil-fuel-based hydrogen, and feasibility of generating, transporting, and storing the required quantities.
- **Acquired emissions of hydrogen:** The proponent assumes that 100% of the hydrogen used in the project will be generated using autothermal reforming ("ATR") with carbon capture and storage ("CCS") throughout the project's entire lifetime. There is no justification for this assumption and it is entirely inconsistent with how hydrogen is currently sourced in Canada.
- **Hydrogen emissions:** The proponent acknowledges that it will use hydrogen generated from methane gas but assumes it will nevertheless be very low-carbon. This is not realistic. Based on real-life facilities, the actual emissions from converting methane gas to hydrogen to electricity are actually *higher* than directly burning methane gas to generate electricity, even if a carbon capture system is used, due to factors such as leaks and

⁵ Draft Technical Guide (link), p. 17.

⁶ *Impact Assessment Act*, s. 6(2).

efficiency losses.⁷ This is illustrated in the following figure from a peer reviewed article published in July 2021.⁸



- Upstream gas emissions:** The proponent disregards the upstream emissions from the extraction and transportation of methane gas. When those are accurately accounted for over a 20-year timeframe, the emissions are 92% higher than the emissions from combustion alone.⁹

The maximum GHG impacts are much higher than the proponent has determined. For example, if the plant burned only methane gas for its lifetime and the upstream emissions are accounted for, it would produce 27,835,947 tonnes of CO₂e, the equivalent of the emissions from 5,997,790 gasoline-powered cars driven for a year.¹⁰ Whether based on the proponent's own project description or a more accurate tally of the maximum or likely GHG emissions, this project will have major GHG emissions impacts.

Finally, GHG emissions clearly meet the definition of "effects in federal jurisdiction" in the *Impact Assessment Act*. For instance, GHG emissions are captured by parts

⁷ Robert W. Howarth and Mark Z. Jackson, "How green is blue hydrogen?" *Energy Science & Engineering*, 26 July 2021.

⁸ *Ibid* at p. 1683.

⁹ The Atmospheric Fund, "Fugitive Methane: New guidelines determine need to curb natural gas emissions in Ontario," May 2022 at p. 7 ([link](#)).

¹⁰ Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator ([link](#)).

(b) (ii) and (iii) of the statutory definition as they are a change to the environment that would occur in a province other than the one where the project is proposed to be carried out and outside Canada.¹¹ Regardless of where they are emitted, GHG emissions are transported globally and are a global problem. Federal jurisdiction has also been confirmed by the Supreme Court of Canada.¹²

Migratory birds and endangered species

This project raises major concerns relating to migratory birds and endangered species. For instance, the property in question is located within the Clay Creek Woodland Area of Natural and Scientific Interest (“ANSI”) and the Bickford Oak Woods Wetland Complex, which is a Provincially Significant Wetland. The southern end of the property itself contains 6.1 hectares of the Clay Creek Woodland ANSI. Given the proximity of the project’s footprint and of the property itself to such valuable ecological features, as well as the application of the precautionary principle, there are significant risks of adverse impacts and current data related to migratory birds and species at risk is required.

However, the environmental impact report submitted by the proponent is fundamentally flawed. This report was prepared almost a decade ago and up-to-date information has not been provided. The conclusions of this report regarding migratory birds and species at risk cannot be relied upon.

For instance, the information related to migratory birds is grossly insufficient. It is both out-of-date and unreliable. The report’s conclusions are based on the *Atlas of Breeding Birds of Ontario* (which is currently being updated), and on the findings of a one-day site visit that took place *outside of the breeding season*.¹³ The contractors did not find any breeding birds during their one-day site visit in September because one cannot find any breeding birds anywhere in September as birds in Ontario are not breeding at that time. Indeed, by September, most species of migratory birds are already embarking on their southward migration and may not be present at all. Direct observations of the property itself during the breeding season are absolutely necessary and have not yet occurred.

¹¹ *Impact Assessment Act*, s. 2 s.v. “effects in federal jurisdiction.”

¹² *Reference re Greenhouse Gas Pollution Pricing Act*, 2021 SCC 11.

¹³ The site visit took place on September 10, 2012. See: Appendix 7.8, *Natural Resources Baseline Report and Environmental Impact Study*, November 2012 at page 11.

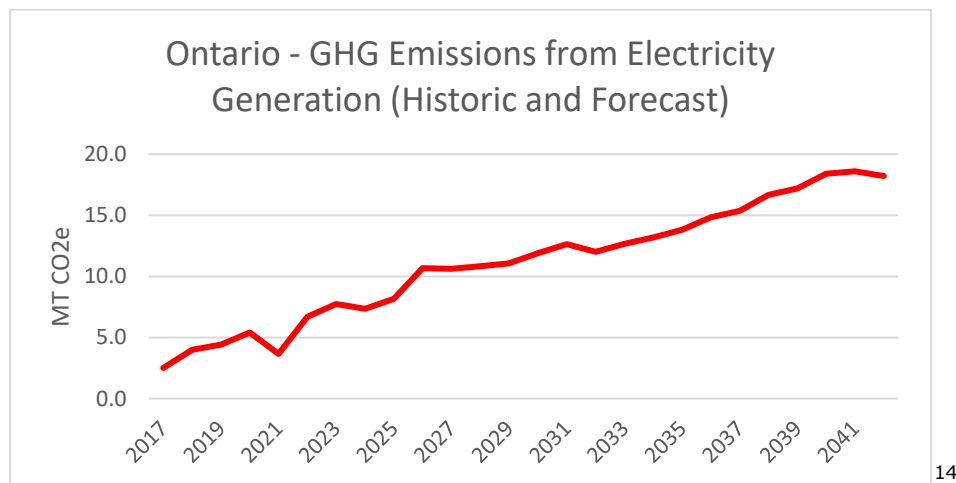
Indigenous impacts

This project is located near to multiple First Nations. It is essential that all Indigenous rights and interests be respected. However, Environmental Defence is not the appropriate body to speak to those issues beyond urging the Agency to carefully consider the input from First Nations and to fully accommodate their interests and concerns.

Provincial processes insufficient

The Agency cannot rely on a provincial environmental assessment in this case.

Ontario's carbon targets and energy policy are inconsistent with federal climate commitments. For instance, Ontario plans to increase GHG emissions by over 600% over the next 20 years with complete disregard for the federal government's 2035 net-zero electricity commitment. The following chart provides the 5-year historic GHG emissions from electricity generation in Ontario and a forecast up to 2042. These figures were published by Ontario's lead electricity agency. They show the obvious conflict in policy:



A similar situation exists with respect to endangered species. Ontario does not adequately protect species at risk. This is particularly the case since the Ontario

¹⁴ Independent Electricity System Operator, *2021 Annual Planning Outlook*, Data Tables, Figure 42 ([link](#)).

Endangered Species Act, 2007 was drastically weakened through amendments enacted in 2019. In a recent report, the Auditor General of Ontario assessed the impacts of these amendments and examined whether the Ontario Ministry of the Environment was effectively and efficiently protecting and recovering species at risk and their habitats. Among other troubling findings, the Auditor General concluded:

The overarching goal of the *Endangered Species Act, 2007* is to protect Ontario's species at risk and to promote their recovery for future generations. Yet, the Environment Ministry's species at risk program misses achieving its central purpose: protecting and recovering species at risk. The purpose of species at risk legislation is to serve as the last line of defence when other programs have been ineffective in conserving nature or have directly contributed to biodiversity loss. The Environment Ministry is not, however, acting in the best interests of species and their habitats.

Our audit found that the Environment Ministry's systems and processes for approvals facilitate and enable harm to species at risk and their habitats.¹⁵

Tailored impact statement guidelines

As noted above, Environmental Defence believes this project should be rejected under s. 17 of the *Impact Assessment Act*. However, if an impact assessment is conducted, it is important that robust Tailored Impact Statement Guidelines ("TIS Guidelines") be prepared. This is necessary because of the major potential impacts and the possibility that those impacts could be obscured by inaccurate and unrealistic assumptions relating to the fuel mix that would be used in this plant and the lifecycle emissions from any hydrogen that would be burned.

Environmental Defence requests that the following items be included in the development of any TIS Guidelines. These items flow from the requirements set out in the *Impact Assessment Act* and the Agency's policy and template for the TIS

¹⁵ Office of the Auditor General of Ontario, *Value-for-Money Audit: Protecting and Recovering Species at Risk*, November 2021, p. 8.

Guidelines. This is not a comprehensive list and instead is a partial list of important items that arise from our review of the initial project description.

Alternatives to the Project

The proponent's project description disregards a number of important alternatives to the project.¹⁶ The alternatives that are disregarded are among the most cost-effective and feasible options. Without further specific direction, this could persist through later stages of the impact assessment. We therefore request that the TIS Guidelines specifically ask the proponent to include an assessment of the following alternatives in addition to those listed in its initial project description:

- **Energy efficiency:** The cheapest electricity resource is energy efficiency. Programming that is tailored to reduce peak load (MW) is much cheaper than new generation. There is a great deal of untapped cost-effective potential in Ontario.¹⁷ This must be part of the alternatives under consideration.
- **Distributed energy resources:** Ontario's lead electricity agency found that expanded distributed energy resources could "contribute to 25%-80% of Ontario's additional capacity needs over the next decade" and could provide even higher amounts of cost-effective capacity if steps are taken to reduce market and regulatory barriers.¹⁸ This is a far better alternative than a new gas plant for reducing energy costs and protecting the environment.
- **Power-to-hydrogen-to-power project:** The assessment should consider alternatives that would include the construction of an electrolyser on-site or nearby to generate green hydrogen. Without constructing a source for green hydrogen, the plant will have an unreasonably high carbon footprint. This is an ideal site for such as project as it is near many methane gas storage facilities, one of which could be considered for conversion to hold green hydrogen.
- **100% hydrogen plant:** The assessment should consider alternatives involving a plant that would use 100% hydrogen at the outset. Turbines can already be purchased to run on 100% hydrogen. A 440MW unit at a gas plant in the

¹⁶ Project Description, p. 28 (the alternatives listed are nuclear, hydroelectric, wind, solar, storage, natural gas, hydrogen fuel mix).

¹⁷ IESO, *2019 Conservation Achievable Potential Study* ([link](#))

¹⁸ IESO, DER Potential Study Stakeholder Session 3: Final Results Presentation, slides 19, 26, & 27 ([link](#)).

Netherlands is being converted to 100% hydrogen, with a target operation date of 2023.¹⁹

- **Convert existing gas plants to hydrogen:** The assessment should consider alternatives involving the conversion of an existing methane gas plant to a hydrogen plant to be run on 100% green hydrogen. This is being done in other jurisdictions.²⁰
- **Imports of Quebec hydropower:** The assessment should consider imports of Quebec hydropower, which are inexpensive, feasible, and zero carbon.
- **Combined options:** The assessment should consider combinations of other options. For example, installations with paired solar and storage are increasingly out-competing gas plants. Similarly, options that involve as much energy efficiency as possible will likely be the most cost-effective and least carbon-intensive.

In addition, Environmental Defences requests that any TIS Guidelines specifically ask the proponent to assess alternatives for feasibility, but also for the overall net economic costs/benefits.²¹ Cost will presumably be one of the factors that would be considered in determining whether the project is in the public interest under the *Impact Assessment Act*. To provide an accurate cost comparison, costs should be assessed from the perspective of society as a whole (i.e., the societal costs test). This is a well-known and well-documented approach that can be applied by the proponent.

Upstream emissions

The TIS Guidelines should require an assessment of all upstream emissions, including upstream emissions from methane gas (e.g., extraction, transportation, and leaks). This is essential in order to generate a full picture of the GHG impacts. In addition, it is necessary to compare the alternatives. For instance, a comparison

¹⁹ NS Energy, *Nuon Magnum Power Plant* ([link](#))

²⁰ E.g., *ibid.*

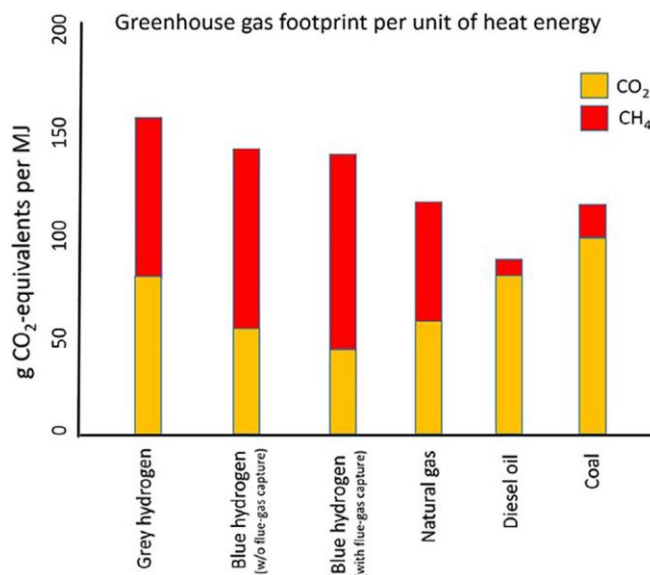
²¹ This is consistent with the TISG Template, which includes: “an assessment of the net economic benefits to the Canadian economy as a whole, which requires a detailed forecast of annual cash flows for the life of the project, including a sensitivity analysis showing the impact of changes in the discount rate, prices, capital and operating costs, or other significant parameters.” Also, cost may be a factor the proponent relies on to argue that their project is in the public interest, and therefore will require concrete details.

of burning methane gas versus the different types of hydrogen can only be accurately conducted if the upstream emissions are counted for in both cases.

Hydrogen forecasts

The TIS Guidelines should require that the proponent provide a credible third-party forecast of the availability, cost, and GHG footprint per unit of heat energy of the various types of hydrogen. A forecast of the availability and cost is important to help assess how realistic the proponent's assertions are regarding the future use of hydrogen in the plant.

GHG footprint is important as the hydrogen being produced today from methane gas is actually more carbon intensive for power generation than just burning the methane itself, as shown in the figure below.²²



An analysis must be comprehensive, including an assessment of the emissions associated with the following steps, where applicable: (a) the process of converting methane into carbon dioxide and hydrogen, (b) the energy used to generate the heat to run that process, (c) any carbon capture process (i.e., the efficiency levels of that process), (d) the energy to run that process, and (e) leaks at all stages, including leaks of hydrogen, which generate potent greenhouse gases when they

²² Robert W. Howarth and Mark Z. Jackson, "How green is blue hydrogen?" *Energy Science & Engineering*, 26 July 2021 at p. 1683.

interact in the atmosphere. As noted above, this should be expressed per unit of heat energy to allow an apples-to-apples comparison that accounts for the various efficiency levels for the differing options.

Uncertainty assessment

The TISG Template calls for an uncertainty assessment relating to GHG impacts. This is particularly important in this project because it relies on resources that do not exist and may never exist, let alone be adopted as cost-effective. The uncertainty assessment should include a third-party study on the likelihood of different scenarios coming to pass, such as a scenario where net-zero hydrogen is available and cost-effective.

Conclusion

Despite its name, this project is a gas plant - i.e., a fossil fuel power generation facility. There are already too many gas plants in Ontario and they are all already "hydrogen ready" in that they can be converted to use 100% hydrogen at a future date, as is being done in the Netherlands as we speak. This plant is clearly not in the public interest. Approving it would set a terrible precedent, allowing other gas plants to go ahead across the country and undermining Canada's climate efforts and climate commitments.

The Minister should reject this project now. This would be fairest to the proponent, who will otherwise be required to invest in studies on a project that simply cannot be approved. It would also allow Ontario to focus on actual net-zero power generation projects. These take time to develop and an early rejection would benefit everyone by providing more time to put in place the most cost-effective ways to meet Ontario's electricity needs without burning fossil fuels.

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Environmental Defence