Comments of the Role for Natural Gas in Ontario

CAFES (community associations for environmental sustainability) thanks the province for this opportunity to comment on the role of natural gas in Ontario. CAFES is an Ottawa-based environmental organization which affiliates with community associations and other organizations throughout urban, sub-urban and rural Ottawa.

Natural gas is the largest source of community-wide greenhouse gas emissions[[1]](#footnote-1) in Ottawa and CAFES therefore feels considerable urgency to comment on its role across the province. The role for natural gas relates both to the commodity itself and the infrastructure that delivers and utilizes it. The commodity is chiefly fossil derived gas but is to a small and increasing degree biologically sourced renewable natural gas and potentially some hydrogen.

Commodity Aspect

The fossil aspect of natural gas is problematic and must preclude its use in the medium to short term because of its contribution to global heating. Recent developments should dissuade the province from thinking that letting up on aggressive greenhouse gas emissions targets would be wise. Peer-reviewed research indicates that every 1000 tonnes of carbon combusted results in one premature death from the myriad of bad effects of global heating[[2]](#footnote-2) Also, recent temperature trends have surprised many, but not all climate scientists, as the planet has tripped over the problematic threshold of 1.5°C of global heating[[3]](#footnote-3)

In contrast to these shortcomings, renewable natural gas (RNG) is a biogenic fuel which contributes only marginally to global heating. In Ontario, wastewater sludge, organic waste streams and farm by-products and residues can all be sustainable sources of organic material which can become renewable natural gas.

A key limitation of renewable natural gas is the availability of feed stock required for its production. Achievable potential studies have often indicated that renewable natural gas could feasibly displace approximately 5% of Ontario’s gas use[[4]](#footnote-4).

There are several things which should be noted about this 5% limit. Firstly, several factors have the potential to increase this limit. More efficient use of gas through better buildings, for example has the potential to reduce overall gas demand and effectively increase the achievable RNG percentage. Secondly, new technologies such as CO2methanation and substrate hydrolysis have the potential to increase RNG production several fold. This RNG production may be enhanced by some levels and blending in of green hydrogen produced in shoulder seasons when electricity is most plentiful.

Overall, however, RNG availability will not approach the level of abundance of fossil natural gas. This means that gas use, including the current use of fossil-based gas, need to start to be carefully considered.

A Need for Asset Rationalization

No discussion of rationalization of gas can occur without a discussion of several key attributes systems which transmit and distribute it. Ontario has a vast gas transmission and distribution network which can move energy at a cost several times below the cost of electricity transmission and distribution on a per unit of energy basis. Additionally, the asset base is very robust with service interruptions being very rare.

Given these advantages and cost differential with electricity distribution costs, it's important to think about the best use of gas assets. Given its lower asset costs, it makes more sense that the gas system is employed less and used to meet peak demands. In contrast, the electricity system with its higher asset costs is better employed for a high continuous operation which gives it a better opportunity to recover its higher capital costs.

This means that the gas system is well suited to applications such as hybrid heating where gas takes over in the coldest days, thereby avoiding costly peaks on the electrical system. This deployment of gas in hybrid heating is best applied to larger buildings. Given that by no later than 2040, most fossil gas should be gone from the gas grid and RNG and green hydrogen supplies are limited, smaller buildings should forgo gas usage entirely. The ongoing improvements in heat pumps can help to support this change.

This elimination of gas usage in low demand areas will lead to changes in the spatial arrangement of the gas network in many areas. The gas system will need to be rationalized to focus on high demand areas in line with the supply limitation of providing only non-fossil gases.

Promoting Change: Transition of the Gas System Will Keep Energy Dollars in Ontario

With Ontario producing only 3% of Canada’s fossil natural gas[[5]](#footnote-5)It's important to note that roughly 90% of Ontario’s gas is imported from outside the province. The sources are from Western Canada and increasingly from the US. These imports at roughly 820 PJ[[6]](#footnote-6) represent a loss of approximately $2.5 billion annually from the Ontario economy.

All efforts to develop renewable natural gas and to use electrification in many areas is a good policy direction for the province. It can be a made in Ontario policy in both the industrial and energy sectors which support the energy transition and climate action. With this approach Ontario can expand its capacity and expertise in RNG and green hydrogen technology.

In Summation

Both climate and economic imperatives require that we take bold action towards a rationalized, non-fossil-based gas system. It will be a smaller system which can focus on its key advantages while ceding a larger role to electrification.

With respect to electrification, the province is appreciating this thinking through, for example, the IESO’s Pathways to Decarbonization studies and recent upwards revisions to electrical energy demand. The logical second aspect is a decarbonization and rationalization approach for the gas supply and transportation system, and in response to this aspect we have the following suggestion which aligns with our thinking.

Key Recommendations:

1. All provincial policies and initiatives should plan for at least a 98% reduction in fossil gas use by 2040.
2. Hybrid heating programs for natural gas in existing buildings should be expanded across the province. This must be encouraged by requiring that all household air conditioners be replaced with heat pumps when they reach their ends of life.
3. For new buildings requiring less than one million BTUs of gas demand on a winter design day, new gas hook-up should be banned. This is required to reduce overall gas demand in line with the amount of RNG and green hydrogen available and reflects ongoing improvements with heat pump technology.
4. Gas appliances which are used during shoulder seasons such as outdoor pool and patio heaters should be banned in favour of electric options.
5. As battery technology is starting to play a large role in the bulk electricity system, single cycle electricity generation should be eliminated.
6. All new or replacement gas assets should be compatible with a 10% hydrogen blend rate which might occur in shoulder seasons.
7. Ontario should work to demonstrate and promote cutting-edge production of RNG including technologies such as methanation and hydrolysis of feedstock substrates employed in RNG production.
8. The province should spur the redevelopment of renewable natural gas by requiring a blending ratio for RNG, similar to that employed in Quebec.
9. New large facilities requiring gas use should be focused in areas of the province where local geology makes carbon capture feasible.
10. There should be an end to the natural gas expansion program[[7]](#footnote-7). For those struggling with energy poverty, a program to encourage heat pumps would be more appropriate.
11. Gas Integrated Resource Planning (IRPs) programs need to become much more active and in addition to demand reduction need to focus on the elimination of gas in low demand density areas, particularly in those with older gas infrastructure.

CAFES Ottawa

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