Canadian Propane Association | Association canadienne du propane

August 17, 2023

Government of the Northwest Territories
Email: INF_Communications@gov.nt.ca

Re: 2030 Energy Strategy (Strategy) and Climate Change Strategic Framework (Framework)

The Canadian Propane Association (CPA) thanks the Government of the Northwest Territories for the opportunity to comment on the 2030 Energy Strategy (Strategy) and Climate Change Strategic Framework (Framework).

The CPA represents over 400 companies in every region of the country. Our members include propane producers, wholesale marketers, transporters, retail marketers and Manufacturers of Appliances, Cylinders and Equipment (MACE) across Canada. Propane is produced in Canada, and transported, and distributed to communities across the north and we appreciate the opportunity to provide our feedback into this important framework.

Propane is one of the cleanest and most versatile energy sources in existence. Canadian propane is a low-carbon, affordable, and reliable energy source that is safe and abundantly available. The Canadian Energy Regulator states that total natural gas liquid (NGL) production is expected to grow 70% by 2050, predominately due to natural gas growth from Western Canada.[1] With an abundant supply and a wide variety of applications, we believe that low emission propane and renewable propane should be a part of the Northwest Territories (NWT) clean energy future.

Propane is already recognized by governments around the world for the contribution it can make toward improved indoor and outdoor air quality and reduced greenhouse gas emissions, as evidenced under Canada's *Alternative Fuels Act*.[2] Supplying affordable, reliable, and clean energy will continue to be the goal of Canada's propane industry. Propane heats over 150,390 homes across Canada and 4,433 in the Northern Territories alone.[3]

Propane's Environmental Benefits

The NWT has an exciting opportunity to transform its energy system to low emission energy sources, while still allowing for reliable and affordable energy that is unique to Canada's northernmost communities. For example, the NWT's diesel demand in 2019 was 4822 litres per capita, more than five times the national average of 855 litres per capita. A significant portion of NWT's demand for diesel fuel is for space heating and power generation. Propane can and should be the energy solution of choice to immediately displace diesel systems especially for heating, power generation and transportation.

Propane emits 60% less carbon monoxide (CO) than gasoline, 98% less particulate matter than diesel and produces lower levels of air toxins, such as benzene and acetaldehyde, than either gasoline or diesel. Compared to Diesel, propane has 26% less GHG emissions with further

[1] CER – Canada's Energy Future 2021 - Results (cer-rec.gc.ca)
[2] Alternative Fuels Act (justice.gc.ca)
[3] Regional-Statistics-The-North.pdf (propane.ca)

opportunities to decarbonize (see below) or while also provide a potential opportunity for the infrastructure to be used to transport clean hydrogen energy.

Furthermore, propane removes the risk of environmental contamination from spills. As a pressurized fuel contained within a sealed system, there is minimal risk of release to the soil or water through handling. Even upon release, it dissipates harmlessly into the atmosphere, making it a safe fuel choice and an even safer choice for the environment

Replacing Diesel

With so much attention on the impacts of climate change, there is an interest by both communities and governments to move away from diesel generation, an infrastructure supported by governments because it was – and still is – the easiest and most economical. We as an industry see an opportunity to replace an aging diesel infrastructure currently dominating this energy market with low-emission propane.

The key to replacing diesel in remote communities is the cost, availability, and portability of the fuel. Propane is unique compared to other alternative or low-emission fuels in that it can be delivered anywhere in Canada. Propane is already available in many communities across northern Canada, including Gjoa Haven (Nunavut), Inuvik (Northwest Territories), Kuujjuaq (Québec) and in Churchill (Manitoba), just to name a few. The propane industry has a competitive, robust supply chain, accessible storage solutions, and the ability to heat homes and generate power for everything from dryers and hot water tanks to refrigerators and lights. And it can even be used as a fuel for vehicles. This significantly reduces the cost of developing expensive electricity infrastructure.

CPA members that deliver propane to these communities understand their customers' unique needs and the environmental and physical challenges of delivering to remote areas. They also understand the importance of supporting local business development. Training can be provided to the local population by the CPA's Propane Training Institute, located in Calgary, creating local expertise, good paying jobs, and community self-sufficiency. Working in partnership with Indigenous, northern, and remote communities, the propane industry can effect real change in reducing GHGs, providing for healthier and more prosperous communities. Propane is part of the solution – it is a low-emission fuel, and it is produced here and available now.

As NWT looks for ways to reduce emissions, propane can play an important role as a clean and affordable energy source. The propane sector can immediately provide commercially viable, scalable, low emission and integrated energy solutions for communities solely relying on diesel fuel and fuel oil for energy.

Improving Residential Heating

According to the latest statistics from Natural Resources Canada for Canada's Territories, wood and heating oil made up 9.4% and 38.9% respectively for residential energy[4] Propane can immediately reductions in NWT residential sector.

Propane as a power generation

[4] Residential Sector Territories1 Table 5: Space Heating Secondary Energy Use and GHG Emissions by Energy Source | Natural Resources Canada (nrcan.gc.ca)

- Is up to 40% cheaper compared to diesel
- Propane burns cleaner than diesel, this leads to a longer engine life and extended service intervals. This means less maintenance requirements, higher availability, and lower costs.
- Even under the more demanding operating conditions, propane delivers robust, reliable, and powerful performance with no downtime. Direct-fired or electric vaporizers ensure continuous, optimal performance of your propane equipment even at extreme freezing temperatures.
- Propane can be stored long-term with zero degradation or contamination, keeping your equipment damage-free.
- Propane, unlike diesel, cannot be stolen due to its natural properties. If there were a leak, propane does not require any expensive remediation as it dissipates harmlessly into the atmosphere.

Below is a sample case study illustrating the economics of converting to propane power systems.

Sample case study

500 residents in community

6,827 MWh annual electricity consumption
780 kw connected power

	Diesel Power 1000 kw @80% continuous load	Propane Power 878 kw @100% continuous load
Capital Costs ($)	$750,000	$1,100,000
Availability (hrs/year)	8000	8570
Yearly fuel costs ($)	$2,332,069	$1,615,174
Yearly maintenance costs ($)	$70,000	$14,000
Total Operating costs ($)	$2,402,069	$1,629,174

Annual Savings:	$772,895 32.18%
10 years Lifetime savings:	$7,728,954
Payback New Engines comparison:	~6 months
Payback Replacing diesel with Propane:	~1.5 years

Transportation Energy Reductions

Currently, Natural Resources Canada notes that (for BC and the Territories) emissions from truck transportations predominately comes from gasoline and diesel emissions (56% and 43% respectively).[5] Autopropane is an excellent alternative fuel for medium and heavy-duty fleets, providing a cleaner burning reliable fuel that works in extreme temperatures. The average Canadian price of auto propane is about 40% less than gasoline and diesel – and over 50% cheaper in some markets. Auto propane burns cleaner and experiences significantly less carbon build-up, increasing engine life, requires fewer filter changes and no diesel exhaust fluid (DEF). And due to the low cost of auto propane and simpler maintenance requirements, fleet operators on average can expect a two-year payback on conversion costs.

Alongside economic benefits, autopropane offers the following benefits over gasoline:

- Auto propane has a lower carbon footprint than gasoline
- Up to 26% less lifecycle greenhouse gas (GHG) emissions.

[5] Transportation Sector British Columbia and Territories Table 24: Truck Secondary Energy Use and GHG Emissions by Energy Source | Natural Resources Canada (nrcan.gc.ca)

- Up to 18% less carbon dioxide at the point of combustion.
- 20% less nitrogen oxide at the point of combustion.
- 98% less particulate matter than diesel-fueled vehicles.
- 60% less carbon monoxide compared to gasoline.

Propane is a lower emission energy source than heating oil, diesel, and gasoline and when upstream (lifecycle) emissions are considered, the case for propane becomes even stronger.

Recommendation:
The CPA recommends the Framework implement a tax credit for homeowners and communities choosing propane as a primary home heating option, over more intensive emission sources (such as diesel and heating oil).

Recommendation:
The CPA recommends the Framework implement a 'Propane Construction Incentive Program' which would encourage builders and remodelers to install more propane appliances in new and existing home construction.

Recommendation:
The CPA recommends that the Framework implement an 'Alternative Fuel Tax Credit' which could serve as an important economic incentive for choosing autopropane in transportation over higher emission energy sources.

Community Engagement
The transition to cleaner energy is not a one size fits all approach and requires community input and consultation as the needs vary from jurisdiction to jurisdiction. The CPA members live and operate in jurisdictions across Canada, including Northern Territories. We support the ongoing inclusion of Indigenous peoples and communities that must have a voice and decision-making power for climate and energy plans, policies, programs, and investments. A strong, diversified, sustainable and dynamic economy for NWT, including Indigenous peoples, contributes to local and national prosperity. Based on longstanding relationships, CPA members know that the desire for expanded use of propane is strong in some communities but that the main barrier for conversion or installation of propane is economic barriers. We believe that propane should be a part of the NWT 2030 emissions reduction plan, and that economic incentives offered to other energy sources should be equitably applied to propane.

CPA members who deliver propane in the North understand the uniqueness of the culture, history and associated titles and rights of their customers in northern, remote, and Indigenous communities. Northern energy needs are unique and building a rapport and a relationship with these communities is key to long term environmental and economic success. CPA members support capacity-building programs for propane to allow more opportunity for people within the communities they serve to gain education, training, and mentoring – and hopefully, employment.

While some communities have welcomed propane as a fuel for heat, hot water, and electricity, across the North, infrastructure that creates a reliance on diesel fuel is pervasive. Changing the demand would require a long-term strategy to create awareness and to educate the consumer on the benefits, both environmentally and financially, of switching to propane. Support is needed

from key stakeholders including local, provincial, and federal governments and local businesses, as well as funding required to install the infrastructure and convert to propane.

Recommendation:
The CPA recommends that the Framework include propane in consultation, engagement, and financial funding opportunities for NWT to ensure a community driven, affordable, and reliable energy transition.

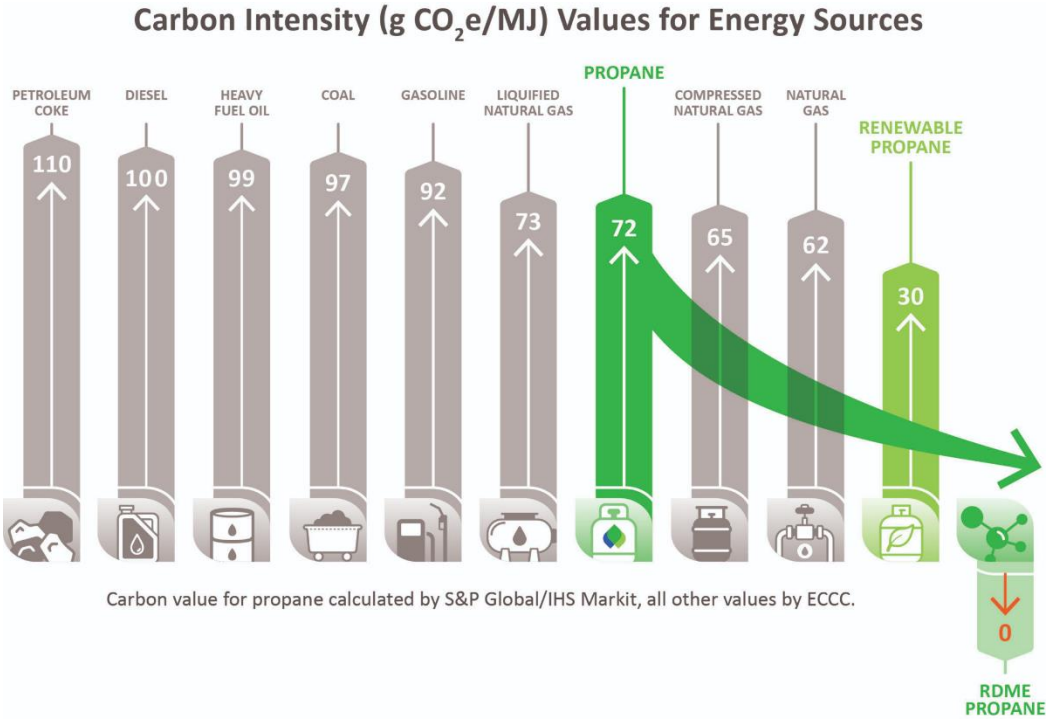
Propane as a Low Emission Back Up
Not only is propane a lower emission energy source for primary energy systems, but propane is also a low emission backup to renewable energy sources. The CPA notes that there is a growing demand for generators in microgrids, which are local energy systems that can be disconnected from the electric grid in the case of extreme weather events or security threats to a grid. From our perspective, it makes sense to decentralize the grid system so that it can be run more efficiently, and safely, using an array of energy sources. Microgrids can be as small as a single building or set of critical building functions, or as large as an entire corporate or academic campus, downtown business district, or neighborhood. Microgrids can be powered with traditional combustion energy sources (such as generators), by renewable energy sources (solar, wind, or biogas), or a combination of these and storage. Pairing propane-fueled generators with solar power and battery storage ensures a constant energy supply for customers. Propane fills the niche as an always-available power source that smooths out the intermittencies of solar and wind resources. Combining solar power, battery storage, and propane-fueled generators also offers a cost-effective approach to reaching 100% reliability and offers better economics than the alternative, underutilized assets, and non-viable project economics.

Recommendation:
The CPA recommends that the Framework provide grants for Indigenous, remote, and rural communities to convert from oil and diesel systems to propane.

Propane's Decarbonization Pathways
Not only does propane offer a cleaner solution that is available now, but propane also has an exciting decarbonization pathway due to breakthroughs in the sector and advancements in technology solutions. Renewable propane is already being produced in the U.S. and Europe and exciting opportunities are on the horizon for Canadian customers. Unlike conventional propane, renewable propane can be made from a variety of renewable feedstocks. The most common form of renewable propane today is a by-product of renewable diesel and sustainable aviation fuel made primarily from plant and vegetable oils, animal fats, or used cooking oil. Renewable propane can be used alone or in blends with other renewable or low-carbon energy - including conventional propane - to further reduce carbon emissions without sacrificing performance. By 2050, renewable propane could meet half the world's demand for propane, according to the World LP Gas Association.

Propane can also be blended with renewable dimethyl ether (rDME), a sustainable fuel source that is produced from renewable feedstocks, such as dairy waste and biogas, or landfills. Compared to diesel and heating oil, rDME has close to 100% GHG emission reductions and can be produced from multiple renewable feedstocks including waste streams and residues, with a low GHG footprint.

Both renewable propane and an rDME blend can be "drop-in" replacement fuels. According to the Propane Education Research Council, a blend of 30% conventional propane, 50% renewable propane and 20% rDME can lower propane's carbon intensity to 0 g/MJ by 2030, with the ability to achieve a negative carbon intensity by 2050.



Recommendation:
The CPA recommends that propane be included in the Framework as a low emission option and be offered the same economic opportunities as other clean energy sources.

Conclusion
The CPA agrees with the goal of reducing emissions, and we are committed as an industry to demonstrate our responsibility to the environment and the economy as NWT moves towards a clean energy future. Ensuring an emissions reduction strategy that includes propane will ensure an equitable transition for all Northern communities.

Our recommendations for the 2030 Energy Strategy and Climate Change Strategic Framework are to:

- Implement a tax credit for homeowners and communities choosing propane as a primary home heating option, over more intensive emission sources (such as diesel and heating oil).
- Implement a 'Propane Construction Incentive Program' which would encourage builders and remodelers to install more propane appliances in new and existing home construction.
- Implement an 'Alternative Fuel Tax Credit' which could serve as an important economic incentive for choosing autopropane in transportation over higher emission energy sources.

- Include propane as an energy choice in consultation, engagement, and financial funding opportunities for NWT to ensure a community driven, affordable, and reliable energy transition.
- Provide grants for Indigenous, remote, and rural communities to convert from oil and diesel systems to propane.
- Include propane in the Framework as a low emission option and be offered the same economic opportunities as other clean energy sources.

No single entity can, on its own, permanently get NWT to net-zero emissions. Success depends on setting the right framework and moving in a consistent and practicable direction via regulations, standards, and incentives.

The outlook for Canada's propane markets and the industry's contribution to the provincial economy are strong and we are committed as an industry to continuing to demonstrate our responsibility to both the environment and the economy. No single energy source can solve every environmental challenge and propane can complement renewable energy systems to reduce emissions while providing reliable energy for homes and critical infrastructure. We believe the NWT can contribute positively to the global reduction of GHG emissions, ensure access to secure energy resources, and reap domestic economic benefits from the evolution of our energy system, including sustained employment, high wages, and more opportunities for Indigenous peoples while also generating revenues for public services by including propane in its clean energy transition.

The CPA encourages the Environment and Natural Resource Ministry to engage and further collaborate with the propane sector to seek opportunities for investment and partnership to support a future that includes propane. The CPA looks forward to discussing this submission at your earliest convenience.

Sincerely,

Katie Kachur
Vice President, Government Relations, West
Canadian Propane Association