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Ministry of Northern Development, Mines, Natural Resources and Forestry

Submitted via Environmental Registry of Ontario

RE: CF Industries Comments on Geologic Carbon Storage in Ontario Discussion Paper (ERO number 019-4770)

Thank you for the opportunity to provide input on Ontario's Discussion Paper on Geologic Carbon Storage in Ontario. Carbon capture and sequestration (CCS) is an essential technology that can enable some of Ontario's largest industries to adapt and thrive in the coming low-carbon future. CF Industries (CF) provides the following input on the proposed changes to geologic carbon storage regulations as well as other actions needed to support the advancement of this technology.

About CF Industries

At CF Industries, our mission is to provide clean energy to feed and fuel the world sustainably. With our employees focused on safe and reliable operations, environmental stewardship, and disciplined capital and corporate management, we are on a path to decarbonize our ammonia production network – the world's largest – to enable green and blue hydrogen and nitrogen products for energy, fertilizer, emissions abatement and other industrial activities.

Headquartered in Deerfield, Illinois, CF operates nine manufacturing complexes in the United States (U.S.), Canada, and the United Kingdom (UK), with an unparalleled storage, transportation and distribution network in North America, and logistics capabilities enabling a global reach. CF's Canadian business includes nitrogen production facilities in Courtright, Ontario and Medicine Hat, Alberta.

As the world's largest producer of ammonia, our business over the last 75 years has primarily revolved around how the nitrogen in ammonia helped the world meet the challenge of feeding a growing population. Ammonia, as the building block for nitrogen fertilizer products, is essential to feeding the world by providing crops with the nitrogen they need in a useable form. Nearly half of the global food supply is made possible only through fertilizer use, including ammonia-based nitrogenous fertilizers. With the world's population expected to exceed 10 billion people by 2050, fertilizers will become even more essential to increasing yields on existing farmland to feed a growing population.

CF's Clean Energy Commitment

Meeting the challenge of climate change is at the centre of our company strategy, which is to leverage our unique capabilities to accelerate the world's transition to clean energy. CF has committed to reducing our own carbon dioxide (CO_2) equivalent emissions by 25% per ton of product by 2030 and achieving net zero carbon emissions by 2050.[1] As part of that commitment, CF announced plans for our first green ammonia project in Donaldsonville, Louisiana. CF also is investing approximately US$285 million to build carbon capture at two facilities in the U.S. which together could sequester up to 2.5 million tons of CO_2 annually and enable the production of blue ammonia. In Canada, CF is working with stakeholders to advance a multi-user CCS hub in Medicine Hat, Alberta. CF's efforts to produce, distribute and deliver

[1] CF Industries Announces Commitment to Clean Energy Economy (October 29, 2020), available here.

clean hydrogen in the form green and blue ammonia can unlock hydrogen's potential as a clean energy source and accelerate North America's energy transition through decarbonization in manufacturing, transportation, power generation and other sectors of the economy.

CF Industries in Ontario

For more than 50 years, CF's Courtright Complex (Courtright) in southwestern Ontario has been an essential part of Ontario's agricultural and industrial supply chain and an important contributor to the provincial economy. Courtright is Ontario's only nitrogen fertilizer manufacturing facility and produces nitrogen-based products such as ammonia and urea ammonium nitrate (UAN) for agricultural and industrial use, as well as industrial products such as diesel exhaust fluid (DEF) and aqua ammonia for environmental applications.

CF's Courtright facility is ideally situated to participate in the emerging clean energy economy. As CF explores opportunities for decarbonizing production from the Courtright facility, CCS is emerging as the most feasible solution. CF believes the Sarnia-Lambton region is well positioned to become a regional CCS hub, due to its suitable geology, concentration of heavy emitters and market and transportation links. Local interest in a CCS solution in the region is growing and CF is part of an informal group seeking to realize the environmental and economic benefits of this technology. To capture and sequester even a portion of the Sarnia region's industrial emissions would make an important contribution to Canada's climate goals and position Ontario as a leader in clean technology opportunities.

With access to local CCS infrastructure and the right policy framework, CF could eventually produce low-carbon or 'blue' ammonia at Courtright to help meet growing demand for clean energy and agricultural inputs. As countries and industries around the world seek to decarbonize, blue ammonia is increasingly being seen as a key enabler of the clean energy economy, including through its direct combustion in maritime shipping, power generation, energy storage and other uses. Ammonia is also an efficient carrier of low carbon hydrogen, facilitating economical transport of this clean energy source to remote locations domestically and around the world.

Ontario's CCS Opportunity

CF is pleased that Ontario is exploring ways to enable and support the safe and permanent sequestration of CO_2 in the province. CCS presents a significant opportunity for Ontario to realize meaningful environmental and economic benefits. These include:

A decarbonization pathway for Ontario's hard-to-abate industries: As the International Energy Agency notes, CCS is one of the few available technologies that can yield significant emissions reductions for particularly hard-to-abate sectors such as cement, steel and fertilizer manufacturing.[2] As Canada's carbon price rises through to 2030, access to cost-effective technology solutions will be integral to preventing carbon leakage in Ontario – the loss of manufacturing and associated jobs to other jurisdictions that do not face equivalent carbon costs.

Ammonia manufacturing is widely recognized as a highly emissions-intensive, trade exposed (EITE) sector and CO_2 is an unavoidable byproduct of the ammonia manufacturing processes that are currently viable. CF has already made substantial progress in reducing its emissions intensity at Courtright, making it one of the most efficient facilities of its kind in the world. Nevertheless, the facility is facing rising greenhouse gas (GHG) compliance costs under Ontario's Emission Performance Standards (EPS) system with no near-term technological solution to cost-effectively reduce them. Without the ability to mitigate rising compliance costs, Ontario emitters are at a significant disadvantage to our international

[2] International Energy Agency (IEA), CCUS in Clean Energy Transitions (2020), page 23. Available here.

competitors who do not face similar costs, and uncompetitive Ontario production could simply shift to other jurisdictions with lower costs and weaker environmental frameworks.

CCS can support long-term business and job retention among Ontario's EITE industries by providing a viable decarbonization method to prevent carbon leakage caused by increasingly stringent carbon policies. Support for CCS should therefore be a central component of Ontario's "Open for Business" approach to creating a resilient provincial economy as Ontario emerges from the pandemic.

Industry growth in a carbon-constrained economy: Ontario's EITE sectors are going to be increasingly challenged to invest and grow in a carbon-constrained future. Through the development of safe and secure CCS and clean energy hubs, far-sighted jurisdictions in Canada and around the world are positioning themselves now to adapt and thrive in a world which will continue to need essential commodities such as fertilizer, but with a much lower carbon footprint.

Development of a CCS hub in the Sarnia-Lambton region could deliver a significant competitive advantage for Ontario by providing a means for EITE industries to grow sustainably. A well-designed, open-access CCS hub will attract additional industry to Ontario as well as enable future expansion at existing facilities. Additionally, CCS hubs are essential infrastructure to support Ontario's clean hydrogen economy and could help position the province to become a leading producer of blue hydrogen and ammonia for growing domestic and international clean energy markets.

Ontario has a window of opportunity, but it is limited: Momentum around CCS is building globally, with the IEA estimating that nearly six gigatons of CO_2 could be sequestered globally by 2050.[3] The Canadian government has fully embraced CCS as a viable decarbonization pathway for Canadian industry and is supporting its development through policies such as a CCS investment tax credit. In its 2021 budget, the federal government also outlined several funding opportunities for CCS and other low-carbon technologies, including the Strategic Innovation Fund's $8 billion Net Zero Accelerator. Access to meaningful government funding opportunities is essential to help offset the significant capital and operating costs of CCS projects. These federal programs, however, are highly competitive and available only for a limited time. Without a clear policy position and pathway on CCS, Ontario could miss out on accessing a potentially significant amount of federal funding to unlock the economic and environmental potential of the technology in the province.

Recommendations

CF supports the Ontario government's proposed steps, as outlined in the Geologic Carbon Storage in Ontario discussion paper, to remove current regulatory barriers to sequestering carbon in a safe and secure manner that will promote both environmental and economic objectives. To realize the full benefit of these changes, however, other complementary policy and regulatory developments are required across the CCS value chain. CF recommends the following actions:

Take a Whole of Government Approach

CF asks the Government of Ontario to take a highly coordinated, whole-of-government approach to creating a policy and regulatory framework that will unlock CCS investment in the province. Experience in other jurisdictions demonstrates that effective CCS policy development will require close collaboration among policy experts in Environment, Energy, Economic Development, Finance and other ministries. As detailed below, CCS investment is enabled through a set of highly interdependent policies and programs including: carbon pricing regulation, carbon offset market development, land tenure rules, funding programs and incentives, red tape reduction, facility and infrastructure permitting and approvals.

[3] CCUS in Clean Energy Transitions, page 48.

We also encourage the Government of Ontario to engage other jurisdictions and stakeholders who have expertise in CCS policies and best practice. Canada was an early leader in deploying CCS technology and has several experts in federal, provincial and municipal governments, industry, non-profit groups and academia who are willing to share their learnings. Similarly, many companies based in Ontario, including CF, have real-world experience with CCS policy in other jurisdictions that can help inform its development in Ontario. The opportunity to collaborate and harness expertise to advance CCS in Ontario is considerable.

Commit to a timeline for building Ontario's CCS framework

The Ontario government should announce and work toward an expedited timeline for establishing a comprehensive CCS policy framework for the province. Commercial-scale CCS projects have long lead times and, even under ideal conditions, require several years to become operational. Ontario must begin planning now to establish the policy framework to allow future industrial decarbonization through CCS. As the Global CCS Institute notes:

> Large infrastructure projects like CCS facilities or pipeline networks, usually take seven to 10 years from concept study through feasibility, to design, construction then operation. There is no time to waste. Creating an enabling environment for investment in CCS facilities and other net zero aligned assets – particularly in supporting infrastructure – through both policy and funding, should be a high priority for governments between now and 2030.[4]

CF recommends the Ontario government announce a target date and timeline for developing Ontario's full CCS policy and regulatory framework to provide potential investors with confidence and much-needed certainty that Ontario businesses will have access to CCS as a viable decarbonization pathway and that needed infrastructure to advance CCS will be developed in parallel.

Amend the Oil, Gas and Salt Resources Act and Mining Act

CF strongly supports the proposal to amend the Oil, Gas and Salt Resources Act to permit the underground sequestration of CO_2. The current prohibition against permanent sequestration of CO_2 is a significant barrier to advancing CCS projects in Ontario. We recommend the full repeal of section 11 (1.1) of the act to send a strong initial signal to potential CCS investors that Ontario is committed to advancing this important technology.

CF also supports the proposal to amend the Mining Act to allow for storage leases that authorize the permanent storage of CO_2 on Crown lands. These leases need to cover sufficiently broad geographic areas and be applicable to specific stratigraphic zones to allow for large-scale carbon sequestration.

Incentivize CCS investment through the EPS system

Although CCS has significant potential to reduce emissions, it also has very high capital and operating costs and must be supported by market-based and regulatory tools that drive emission reductions in a cost-effective manner. This is currently a significant gap in Ontario's EPS carbon pricing system which deters investment in carbon sequestration technologies.

Following publication of the final EPS regulations in late 2021, the Ministry of Environment, Conservation and Parks (MECP) confirmed that any amount of CO_2 that is captured through CCS by regulated facilities is still considered as an emission by the facility that originally generated the CO_2.[5] While MECP indicated it would review this decision, no timeline has been provided. Ontario also lacks a carbon offset system,

[4] Global CCS Institute, Global CCS Status 2021: CCS Accelerating to Net Zero, page 12.

[5] Environmental Registry of Ontario, Amendments to support transition and implementation of Ontario's Emissions Performance Standards program: Decision Summary (ERO number 019-3719). Available at https://ero.ontario.ca/notice/019-3719.

which would provide an alternate pathway for CCS projects to earn credits for permanent CO_2 sequestration and is a notable gap in Ontario's approach to incentivizing emission reductions.

Ontario's approach to carbon pricing should be updated to include the following:

- Allow emission reductions for CO_2 permanently sequestered underground by facilities regulated under the EPS to be deducted from a covered facility's verified emissions under the EPS system.
- Establish a robust provincial offset system that enables the generation of voluntary credits through a CCS protocol for projects outside covered sectors.
- Recycle EPS compliance payments quickly and efficiently into carbon-reducing technologies for heavy industry such as CCS.

CF views these changes as highly time sensitive, given that the federal government is reviewing provincial carbon pricing systems this year for the 2023 to 2030 compliance years. We urge the Ontario government to make the inclusion of CCS in the EPS system a priority item during this year's negotiations with the federal government.

Develop a full CCS regulatory framework

CF welcomes the ministry's proposal to enable the Ontario government to work directly with project proponents through voluntary agreements to advance CCS pilot and demonstration projects. These initial projects can help build knowledge and de-risk investment in commercial scale facilities. We view this, however, as an interim step toward scaling up investment in CCS. Long term, Ontario needs a comprehensive, efficient and transparent regulatory framework spanning the full CCS value chain. This detailed framework is necessary to provide potential CCS investors with regulatory certainty and to enable development of long-term carbon mitigation strategies.

In addition to amending the OGSRA and the Mining Act, the Ontario government should move forward as quickly as possible to develop its long-term CCS regulatory framework, including:

- An efficient, open and competitive process for securing pore space in sufficiently large blocks for carbon sequestration activities, including future multi-user hubs.
- A liability framework, potentially modelled on the Alberta system, which transfers long-term responsibility for sequestered CO2 to the province at the end of the project's life.
- A streamlined permitting regime for surface infrastructure associated with a CCS project such as CO2 wells and pipelines.

Conclusion

Ontario is fortunate to have many of the necessary attributes to become a leader in carbon sequestration technology. The proposals outlined in the Geologic Storage of Carbon in Ontario discussion paper are positive first steps toward realizing the benefits of CCS technology in Ontario and should be part of a coordinated approach across government toward scaling up commercial CCS deployment. CF looks forward to continuing to work with your government on this important opportunity for Ontario to address critical environmental and economic objectives.

Sincerely,

Greg Kennette
General Manager

CC: Hon. Greg Rickford, Minister of Northern Development, Mines, Natural Resources and Forestry
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