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Ontario Ministry of Natural Resources and Forestry

Submitted via Environmental Registry of Ontario

RE: CF Industries Comments on Regulating Commercial-Scale Geologic Carbon Storage Projects in Ontario (Environmental Registry of Ontario Notice 019-8767)

Thank you for the opportunity to provide input on proposed carbon storage regulations for commercial-scale projects in Ontario. Carbon capture and sequestration (CCS) is an essential technology to enable some of the province's largest industries to transition to a low-carbon future. CF Industries ("CF") can offer a unique perspective on this topic both as an Ontario-based industrial emitter of carbon dioxide (CO₂) and as a global company advancing multiple CCS projects across our network.

About CF Industries

At CF, 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 low-carbon hydrogen and nitrogen products for energy, fertilizer, emissions abatement and other industrial activities.

Headquartered in Northbrook, Illinois, CF operates manufacturing complexes in the United States, Canada, and the United Kingdom, with an unparalleled North American storage, transportation and distribution network, and logistics capabilities enabling a global reach. CF's Canadian business includes Ontario's only nitrogen production facility, in Courtright, Ontario (operated by Terra International (Canada) Inc., a wholly owned subsidiary of CF Industries), and Canada's largest nitrogen production facility in Medicine Hat, Alberta.

As the world's largest producer of ammonia, our business has primarily revolved around how the nitrogen in ammonia helps the world meet the challenge of feeding a growing population. More recently, low-carbon ammonia is 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.

CF has set goals to reduce our own CO₂ equivalent emissions by 25% per ton of product by 2030 and achieve net zero carbon emissions by 2050.¹ CF's progress toward those goals includes:

- Investing in CCS at our Donaldsonville, Louisiana facility to enable the permanent sequestration of up to two million tons of CO₂ annually
- Progressing a CCS project at Yazoo City, Mississippi to reduce CO₂ emissions by up to 500,000 tonnes annually
- Evaluating opportunities to capture CO₂ at CF's Medicine Hat Complex for permanent sequestration

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

- Working with global partners to explore the development of greenfield low-carbon ammonia production capacity in Louisiana
- Commissioning North America's first commercial-scale green ammonia project at Donaldsonville to produce up to 20,000 tons of green ammonia (via production of 3,500 tons of green hydrogen) per year

Recommendations:

CF has reviewed the Discussion Paper on Regulating Commercial-scale Geologic Carbon Storage Projects in Ontario ("Discussion Paper") and offers the following recommendations for building a carbon storage regulatory framework:

1. Prioritize carbon storage in southwestern Ontario

CF supports a scope for Ontario's carbon storage regulatory framework that focuses on saline aquifers and depleted oil and gas wells in southwestern Ontario, where conditions for carbon storage appear to be favourable. Ontario's regulatory framework should enable storage hubs while also allowing flexibility for standalone projects where conditions do not support a multi-user solution.

CF's Courtright Complex is situated in the Sarnia-Lambton region of southwestern Ontario, an area well positioned to become a regional hydrogen and CCS hub due to its concentration of heavy emitters, skilled workforce and market and transportation links. 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.

Safe and secure CO₂ sequestration is one of the few viable ways to avoid rising greenhouse gas compliance costs that otherwise could threaten the global competitiveness of Ontario manufacturers, particularly in sectors with hard-to-abate emissions such as fertilizer manufacturing. Carbon storage also offers opportunities to expand and diversify the province's manufacturing sector into new low-carbon products. For instance, with cost-effective access to local carbon transportation and storage infrastructure and the right policy and regulatory frameworks, CF could eventually produce low-carbon ammonia at Courtright to help meet growing North American demand for clean energy and low-carbon agricultural inputs.

Building public support for a future carbon storage hub will be critical and CF encourages the Ontario government to work closely with the many southwestern Ontario stakeholders who have already begun to explore decarbonization solutions for the region. Indigenous participation will be particularly important and must include opportunities for early and meaningful engagement as well as creating opportunities for indigenous partners.

2. Incorporate detailed input from potential end users into any competitive process to select hub developers on Crown land

The selection of a carbon storage project developer is one of the most critical steps in enabling sequestration projects. To the extent the Ontario government undertakes a competitive process on Crown lands to select a developer, this process will need to optimize the safe and responsible use of finite pore space while ensuring high-quality projects advance in a timely manner. To achieve this, any competitive process must incorporate detailed input from potential end users of the hub to help identify a CCS development partner with proven subsurface development capabilities willing to develop the project under reasonable commercial terms. Without viable commercial terms for emitters, carbon capture projects in these areas will not move forward.

CF is currently implementing two CCS projects in the United States (Louisiana and Mississippi) and evaluating a third project in Canada (Alberta). Our company undertakes significant due diligence to select a long-term partner who will receive and sequester captured CO₂ from our facilities. This ensures a close alignment of interests on safety and reliability, project schedules, indigenous and community engagement, engineering/design and commercial terms to ensure a successful project.

If the Ontario government undertakes a competitive process to select a hub developer, the emitter's choice in CO₂ offtake partner would be limited to the successful hub applicant for a given region. As a result, it is critical that Ontario's process carefully evaluate the viability of each proponent based on criteria and input from the emitters who may be end users of the hubs. This will require direct engagement of interested emitters, along with up-front due diligence on the applicant's safety, financial and technical capacity and a range of commercial considerations, which will vary by emitter.

3. Apply evaluation criteria to the competitive process that will enable viable commercial agreements

CF supports the Discussion Paper's proposed hub project evaluation criteria related to safety, environmental, socio-economic and indigenous community considerations for any competitive process to select a hub developer on Crown land. In addition to those criteria, CF recommends Ontario's competitive process:

- Ensure open access to the hubs at competitive rates, since emitters will likely only have access to a single hub operator in most cases, making the hub a common infrastructure
- Assess the likelihood the applicant will be able to develop viable commercial agreements with CO₂ providers in the region, given the range of potential emission sources, facility configurations and commercial models that may be present in a single carbon storage hub
- Allow the CCS provider to obtain a reasonable return on its investment, while recognizing that CCS technology only allows emitters to avoid paying a compliance cost which would otherwise make facilities like CF's facility in Courtright less competitive with other global producers who do not face similar costs
- Evaluate the applicant's financial capacity to assume liability for sequestered CO₂ as part of the commercial agreement, with long-term liability for the CO₂ ultimately transferring to the Crown at project closure
- Set milestones to be met by the successful applicant to ensure projects advance in a timely manner once a hub operator is selected
- Include a fair and transparent process to transfer carbon storage rights to a new provider under certain limited circumstances, such as the inability to meet the milestones discussed above

Ontario's regulatory framework will need to clearly address liability for stored CO₂ to ensure developers have certainty on this point when establishing commercial offerings. This liability should be established in advance of developer selection for hubs so emitters have full visibility of commercial obligations and risks. Without this clarity on storage liability, both during the project and upon closure, emitters are unlikely to enter into commercial agreements with hub operators and projects are likely to stall.

4. Establish a clear and efficient regulatory process

CF supports the proposal to issue carbon storage approvals based on the phases of a carbon storage project. We recommend evaluation permits be valid for at least five years and storage permits for at least 20 years with the ability to renew if required.

Ontario's regulatory process should also outline firm permitting review timelines so project developers can build project schedules for these complex projects with a reasonable degree of confidence. Regulatory

approvals are a critical pathway for any project. Uncertainty about approval timelines can impact major project milestones and even delay investment decisions.

5. Prioritize development of CO₂ accounting methodologies

Alongside the planned carbon storage regulatory framework, the Ontario government should prioritize development of methodologies for accounting for sequestered CO₂ under current and future greenhouse gas regulations, particularly the Emission Performance Standard (EPS) Regulations and a future emissions offset system. The ability to reduce facility greenhouse gas (GHG) compliance costs and potentially earn, bank and trade surplus credits from sequestered CO₂ is fundamental to the viability of any CCS project in Canada. Alberta, for instance, has an emission offset quantification protocol for permanently sequestered CO₂ and has developed two new CCS credit classes under the province's TIER regulations to support new CCS investment. This type of system enables project proponents to understand how credits may be generated, transferred, sold, banked and/or used towards facility compliance obligations which, in turn, helps determine whether a project is economically viable.

Without such a system in Ontario, emitters cannot evaluate the economics of investing in CCS and projects in the province simply will not proceed. The CO₂ accounting methodology should be considered complementary to the carbon storage regulations in Ontario and developed in tandem.

6. Build government's administrative capacity to advance projects in a timely manner

Large emitters in Ontario have a very limited window of time in which to advance carbon storage solutions, so it will be critical that the Ontario government develops sufficient administrative capacity to review and approve projects under the new regulatory framework.

CCS projects – particularly multi-user hubs – are exceptionally complex and require several years for design, approval and construction. At the same time, greenhouse gas (GHG) compliance costs for large emitters are expected to rise significantly through 2030, driven by annual stringency increases and a carbon price schedule set by the federal government. Timelines for CCS investment in Canada are further constrained by the scheduled phase out of the federal CCUS Investment Tax Credit after 2030.

To enable Ontario projects to benefit from the federal investment tax credit and avoid uncompetitive carbon compliance costs, Ontario will need to develop significant new administrative capacity to manage and process regulatory applications in an efficient manner while upholding high technical requirements. We encourage Ontario to engage external technical resources to support administration of the new regulatory framework – an approach that has been applied successfully in some other jurisdictions.

Thank you for the opportunity to provide input on Ontario's carbon storage regulatory framework and please do not hesitate to contact me if you require further information.

Sincerely,

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