

# 2021

ESG REPORT  
SHAPING A BETTER WORLD



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# Letter from Our CEO



I am pleased to share NOVA Chemicals' 2021 Environmental, Social, and Governance (ESG) Report covering a year of dynamic progress within the company and around the world with our wider stakeholder community. Each day, we are guided by our company's purpose "to shape a world where plastic products that are vital to our health and happiness are better tomorrow than they are today." Keeping that purpose in mind informs how we view both the opportunities and the challenges we face. We integrate our ESG priorities into how we do business — from how we engage and compensate our employees, to how we make our facilities safer and higher performing, to how we prepare for a future with less carbon and more recycled plastic.

2021 was extraordinary in many ways. While we faced challenges in our supply chain from the pandemic, weather events, and energy market dynamics, we also

delivered sector-leading business results and improved safety performance because of the collaboration and resilience of our employees and partners throughout our ecosystem. We continued to make meaningful progress on our ESG ambitions to build a circular economy for plastics, to launch our Inclusion and Diversity Strategy, and to focus on our role in decarbonization.

In this report we will update you on these priority ESG areas as they are core to our business strategy and aligned to the global interests and concerns of people throughout our society. We will also report our progress in safety, a core value for the company as we reach towards our goal of zero workplace injuries, and in our critically important environmental, ethics, and supply chain areas.

This year we:

- Advanced the plastics circular economy by increasing the market for recycled plastic and the recyclability of plastics. We entered new collaboration agreements, shipped railcar quantities of recycled polyethylene (rPE) resin and introduced next-generation moisture barrier resin, that expands the recyclability of food packaging applications.
- Changed the trajectory of our carbon emissions by identifying renewable energy; carbon capture, utilization, and storage (CCUS); clean hydrogen; and game-changing technology as key solutions to reducing our carbon footprint.
- Created our first-ever employee Inclusion and Diversity Council as part of our Inclusion and Diversity Strategy.

- Achieved strong safety performance with a 0.27 combined employee and contractor recordable injury rate. This was accomplished in a year when we made significant progress towards completing construction of our new Advanced SCLAIRTECH™ technology (AST2) and ethane cracker facilities near Sarnia, Ontario.
- Received a Silver Rating by EcoVadis®, placing us in the top 15 percent of companies in our industry assessed by EcoVadis. We also developed a Supplier Code of Conduct outlining expectations of suppliers in areas such as human rights, health and safety, environment, and more.

We look back on 2021 in many ways as a transformative period of responding to challenges and preparing for the future. All of this is only possible through the hard work and dedication of our 2,450 employees. Looking ahead, we are delighted to be participating in the United Nations Global Compact® (UNGC) to align NOVA Chemicals' purpose with that of others to shape a world that is better tomorrow than it is today. I look forward to continuing to share our news with you as we advance our ESG journey in 2022.

Sincerely,

Luis Sierra  
President & Chief Executive Officer

# 2021 ESG Highlights

Continuing our

## STRONG SAFETY PERFORMANCE



with a **0.27** combined recordable injury rate, marking our second year of best-ever performance and made substantial progress towards completion of our new Advanced SCLAIRTECH technology facility (AST2) and Corunna cracker expansion.

Building the market for

## RECYCLED PLASTICS



- Delivering railcar-quantity sales of recycled polyethylene (rPE) resin to customers
- Reaching three collaboration agreements to supply rPE resin to our customers

Increasing the

## RECYCLABILITY OF PLASTICS



through innovations such as our next-generation SURPASS® HPs267-AB resin (moisture barrier) that is up to 20 percent better than its predecessor and expands the recyclability of food packaging.

Enacting our

## SUPPLIER CODE OF CONDUCT



The Code outlines our ethical and compliance expectations of suppliers in the areas of human rights, health and safety, integrity and confidentiality, transparency, and the environment.

Launching our

## 1<sup>ST</sup> INCLUSION & DIVERSITY COUNCIL



The Council is composed of 12 employees and two executive members to help guide our inclusion and diversity efforts.

Achieving a

## SILVER RATING BY ECOVADIS



This places us in the top **15%** of companies in our industry assessed by EcoVadis, a global provider of business sustainability ratings.



# About NOVA Chemicals

NOVA Chemicals develops and manufactures ethylene and polyethylene for plastic products and packaging that are essential to making everyday life healthier and safer. Our company is headquartered in Calgary, Alberta, Canada, and has operations in Alberta and Ontario in Canada and Louisiana in the U.S. NOVA Chemicals is wholly owned by Mubadala Investment Company of the Emirate of Abu Dhabi, United Arab Emirates.

The polyethylene resins we manufacture are used by our customers to make plastic products that contribute to keeping people healthy and safe. From packaging for food and water, to e-commerce and recreational equipment, plastic is and will continue to be a valuable material that enhances modern life. How we manufacture, use,

NOVA Chemicals' purpose is to help shape a world where the plastic products vital to our health and happiness are even better tomorrow than they are today.

recycle, and recover plastic is also part of what we do.

Through our commitment to sustainability and Responsible Care® principles, our employees consistently work to ensure health, safety, security, and environmental stewardship throughout every facet of our operations.



## NOVA CHEMICALS' CURRENT LOCATIONS



### Canada

#### ALBERTA

- NOVA Chemicals Head Office, Calgary
- Joffre Manufacturing Site
- Centre for Applied Research, Calgary
- Centre for Performance Applications, Calgary
- Red Deer Executive Place Office
- Pipeline Office, Sherwood Park

#### ONTARIO

- Corunna Manufacturing Site
- St. Clair River Manufacturing Site
- Moore Manufacturing Site
- Manufacturing East Corporate Centre, Sarnia

### United States

#### PENNSYLVANIA

- U.S. Commercial Center, Pittsburgh

#### LOUISIANA

- Geismar Manufacturing Site

### International

- Fribourg-European Operating Center

## 2021 Company Changes and Major Project Updates

- In 2021, we experienced several changes to our Leadership Team. To see the most current members of the Leadership Team and Board of Directors, visit our [website](#). For details on our Board, see the Corporate Governance section of this report on [page 54](#)
- We made substantial progress towards the completion of our Corunna Cracker Expansion Project and new Advanced SCLAIRTECH unit in Sarnia, Ontario

# How We Create Value

NOVA Chemicals develops and manufactures chemicals and polyethylene resins with a focus on research and development to enable plastic products that are better tomorrow than they are today.

## Input



### ECONOMIC

- \$670 million in capital expenditures
- 2 innovation centers
- 5 manufacturing sites
- 5 commercial and sales centers
- 7,700 leased/owned railcars
- 580 km of pipelines



### ENVIRONMENTAL

- 114 million GJ energy
- 38 million GJ natural gas, natural gas liquids, and other hydrocarbons
- 40 million m<sup>3</sup> of water



### SOCIAL

- 2,450 employees
- ~2,300 suppliers
- ~300 customers

## Business Activities



### INNOVATION

Innovative scientists at our two technology centers develop and test new PE resins and applications and game-changing technologies to transform recycling and production processes.



### MANUFACTURING

Our safe and high-performing operations convert natural gas liquids into polyethylene resins that are used by customers to make plastic products that enhance modern life and contribute to keeping people healthy and safe. We also manufacture ethylene and other chemical products.



### Recycled Polyethylene (rPE) SUPPLY

To advance a circular economy that conserves the value of plastics, we offer a range of ready-to-recycle and rPE resins to our customers and are collaborating to develop sources of post-consumer plastic from hard-to-recycle plastic materials.

Read more about our role in the circular economy on [page 13](#).



### SALES & CUSTOMER EXPERIENCE

We provide a world-class customer experience through excellent service and the application of our technical know-how to develop solutions that meet our customers' needs.

## Output



### ECONOMIC

- \$5.1 billion in revenue
- 3.8 million tonnes ethylene capacity
- 2.2 million tonnes polyethylene (PE) capacity
- rPE and ready-to-recycle resins



### ENVIRONMENTAL

- Reached three partnerships to develop rPE supply
- Partnering at a global level to close gaps that lead to plastic waste
- 4.7 million tonnes of CO<sub>2</sub>
- 34 kilotonnes of waste generated in manufacturing with a 45 percent recycling rate



### SOCIAL

- \$472 million paid in salaries and benefits
- Providing competitive and meaningful Total Rewards opportunities for employment
- Supporting employee well-being
- \$2.2 million invested in communities
- Maintaining safe operations
- Enabling safer and better plastic resins



# About This Report

We have been reporting on our non-financial performance since the publication of our first sustainability report in 2014. This is our eighth annual sustainability report, now called our Environment, Social, and Governance (ESG) report.

This ESG report helps us demonstrate how we create value for the company, our suppliers, and customers; how we work to help solve global challenges; and how we care for people and the environment.

We continue to report in accordance with Global Reporting Initiative (GRI) Standards and align our reporting to the United Nations Sustainable Development Goals (SDGs) and the Sustainability Accounting Standards Board® (SASB) Standards. By aligning with these frameworks and expanding our disclosures, we enhance comparability with our peers and more clearly connect our ESG activities with company value creation.



**Responsible Care®**  
Our commitment to sustainability.

## OUR FOUNDATION IN RESPONSIBLE CARE

NOVA Chemicals' Responsible Care program and codes of practice are based on the Chemistry Industry Association of Canada's (CIAC) Responsible Care Ethic and Principles for Sustainability, which guide how we manage issues relating to health and safety, environment, and social responsibility.

The Responsible Care initiative is recognized by the United Nations and has been adopted by the global chemical industry.

The Responsible Care program is core to our sustainability and ESG efforts. These include broader sustainability topics that are crucial to meeting the expectations of our stakeholders, maintaining our leadership position in our industry, and delivering on our growth strategy.



## Scope of This Report

- Unless otherwise noted, this report covers performance for the calendar year 2021, with historical data dating back to 2017
- We report environmental data based on operating control (i.e., we report 100 percent of the environmental impacts of our operated facilities regardless of ownership percentage). Using this principle, we do not report our portion of environmental impacts for non-operated joint ventures. In some instances, estimates are made based on best-available information and records at the time of writing
- Data is based on permanent employees. When noted, safety data includes contractors
- Techniques for data measurements and calculations, if not industry standard, are stated with the data
- Unless noted, financial data is in U.S. dollars and environmental data is in metric units
- Senior management and relevant staff have reviewed key information and believe it is an accurate representation of our performance
- Third-party assurance was conducted by [Dillon](#) on our Canadian assets' 2021 GHG emissions data for regulatory purposes
- This report covers performance for NOVA Chemicals and the subsidiaries covered in our consolidated financial statements. The terms NOVA Chemicals, our, we, the company, and the corporation refer to NOVA Chemicals Corporation and its subsidiaries as a whole
- To reflect the October 2020 divestiture of our expandable polystyrene (EPS) business unit, data from the EPS business is excluded starting from 2020 in this report
- To reflect the 2017 acquisition of our Geismar, Louisiana, facility, data from that facility is included starting from 2018 in this report
- Note: This file has been changed since its publication on July 6, 2022. The only change is to the legend on the "Process Safety Event" chart on [page 40](#)

## Reporting Framework Alignment

We report on these topics with:

[GRI](#) Standards (Core level) [page 78](#)

We cross-reference our disclosures with the following standards:

[SASB](#) [page 80](#)



## Topics Covered in This Report

To determine content for this report, we conduct a biannual materiality assessment. Our most recent assessment took place in November 2020. During the process, we engaged subject matter experts and leaders across our business. Our resulting ESG Reporting Framework is categorized into the following three areas:

### Priority Topics

These topics are of global concern and interest to our value chain stakeholders. Priority topics are core to our business strategy and our business performance. We provide the most extensive disclosure on these topics.

Plastics circular economy

Climate care

Inclusion and diversity

### Foundational Topics

These topics reflect the social or environmental expectations of our employees, owner, and other stakeholders. We provide supporting disclosure on these topics.

Air emissions

Water

Waste

Product safety

Employee and contractor safety

Process safety

Transportation safety

Ethics

Responsible supply chain

### Reporting Topics

We report on these topics with relevant qualitative discussion and data.

Physical impacts of climate

Employee health and wellness

Community and Indigenous relations

Economic impact

Public policy

Corporate governance

Cybersecurity

# Our Contributions to Society

We believe that sustainability and Responsible Care standards must be at the core of everything we do. Working on the environment, social, and governance aspects of our business supports living our purpose of shaping a world where the products vital to our lives are better tomorrow than they are today, and also contributes to solutions for specific global challenges, as embedded in the United Nations SDGs.

OUR ESG ACTIVITIES	RELEVANT ESG TOPIC	OUR ESG ACTIVITIES CONTRIBUTE TO THE FOLLOWING SDGs:
Advancing a plastics circular economy supports more sustainable consumption and production patterns and helps to protect marine and terrestrial ecosystems.	Plastics Circular Economy	<div>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</div> <div>14 LIFE BELOW WATER</div> <div>15 LIFE ON LAND</div>
GHG reduction initiatives support global decarbonization efforts to combat climate change and promote a more sustainable industry.	Climate Care	<div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>13 CLIMATE ACTION</div>
Fostering inclusion and diversity supports equality in the workplace and provides productive and decent work for all.	Inclusion and Diversity	<div>5 GENDER EQUALITY</div> <div>8 DECENT WORK AND ECONOMIC GROWTH</div>
Working towards improved ESG performance helps us: <ul style="list-style-type: none"> <li>Minimize our environmental impacts by reducing waste, using energy and water efficiently, and promoting sustainable economic growth</li> <li>Keep our people, communities, and customers safe</li> <li>Support healthy lives and promote well-being</li> <li>Support the maintenance of effective, accountable, and inclusive institutions through our ethics programs in our company and supply chain.</li> </ul>	Air Emissions Water Waste Employee and Contractor Safety Process Safety Product Safety Transportation Safety Ethics Responsible Supply Chain	<div>6 CLEAN WATER AND SANITATION</div> <div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</div> <div>3 GOOD HEALTH AND WELL-BEING</div> <div>8 DECENT WORK AND ECONOMIC GROWTH</div> <div>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</div>



The Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.



**United Nations**  
Global Compact

NOVA Chemicals has joined the United Nations Global Compact initiative — a voluntary leadership platform for the development, implementation, and disclosure of responsible business practices. We are proud to join thousands of other companies globally committed to taking responsible business action to create the world we all want. Read more [here](#).





# ENVIRONMENT

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Air Emissions 23 >

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Waste 25 >

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Water 27 >

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We are committed to innovating to develop the plastics circular economy, driving decarbonization across our organization, promoting sustainable practices, and proactively and responsibly managing our operational impacts to air, water, land, and biodiversity.



# Plastics Circular Economy

Our bold vision is to enable a circular economy to help create a world free of plastic pollution. We collaborate across the value chain to develop the products that will create a circular economy for plastics through reuse, recycling, and recovery.

## HOW NOVA CHEMICALS PROVIDES PLASTIC CIRCULAR ECONOMY SOLUTIONS

Post-consumer resin (PCR) is produced from post-use plastics through mechanical or advanced recycling. We will participate in the recycled plastics market through agreements and partnerships with recyclers to supply rPE to our customers, helping them to achieve their recycled content goals. We will also work with our recycler partners to enable higher quality recycled polyethylene. As a key player in the plastics value chain, we can help develop markets for high-quality post-consumer plastics while supporting value chain sustainability goals. In 2021 we achieved our first railcar-quantity sales of rPE.

As members of the American Chemistry Council (ACC) and the Chemistry Industry Association of Canada (CIAC), we will continue to support North American plastics industry goals:

- 100 percent of plastic packaging will be recyclable or recoverable by 2030
- 100 percent of plastic packaging will be reused, recycled, or recovered by 2040
- America's Plastic Makers® [5 Actions for Sustainable Change](#)



## Why is it important for us to contribute to a plastics circular economy?

A plastics circular economy transforms the lifecycle of plastic, helping to eliminate plastic waste and minimize new resource use. It also contributes to the long-term success of our business and the plastics industry, and a thriving society.

## Management Approach: How We Contribute to a Plastics Circular Economy

In a plastics circular economy, materials are recycled so they can be used again and again.

Our role in the plastics value chain provides us with the opportunity to create new products and applications in collaboration with our customers, brand owners, and others and to participate in global efforts to eliminate plastic waste. To help address some of the biggest challenges to achieving a circular economy, we focus on three pillars: increasing plastic recyclability, increasing use of post-consumer plastics, and preventing plastics from becoming waste. Each of our solutions and activities can impact one or more of those pillars (see details throughout the rest of this section):



### 1 Ready-to-Recycle Resins



#### WE OFFER A PORTFOLIO OF SEVEN POLYETHYLENE (PE) RESINS

that retain their key physical performance properties when reprocessed multiple times through mechanical recycling. This enables their reuse in high-value flexible film applications such as stretch films, stand-up pouches, multi-pack collation shrink, and heavy-duty sacks. They are also designed to incorporate a high percentage of recycled material in flexible packaging without affecting the performance in the end-use application. Through proprietary studies, we have demonstrated that when plastics such as PE stretch film are manufactured with our ready-to-recycle resins, they can be reprocessed into similar products several times. Ultimately, they can be converted into durable plastic goods such as synthetic lumber for furniture or fencing.

### 2 Recycled Polyethylene (rPE) Resins



#### WE HELP ADDRESS OUR CUSTOMERS' AND BRAND OWNERS' CHALLENGES BY PROVIDING RECYCLED

**POLYETHYLENE** for use in everyday products and packaging. Our rPE products are 100 percent PCR, enabling these valuable materials to be recycled and reused again and again. Through three strategic long-term agreements, we help these companies meet their goals to increase the amount of post-consumer material in plastic packaging such as e-commerce packaging, stretch films, trash bags, shrink bundling, and heavy-duty shipping sacks.

## 3 Applications that Incorporate rPE



**EXPERTS AT OUR CENTRE FOR PERFORMANCE APPLICATIONS PROMOTE CIRCULARITY** by designing film structures and rigid products that incorporate rPE. In one example, our team developed a series of customizable film structure designs formulated with rPE. The film structures, which incorporate recycled low-density and linear low-density polyethylene (rLDPE/LLDPE), can be tailored to meet the needs of customers who want to incorporate recycled content into products such as protective packaging for e-commerce.

## 4 Recyclable Packaging Design



**WE CAN AMPLIFY OUR IMPACT ON THE PLASTICS CIRCULAR ECONOMY BY DESIGNING FOR CIRCULARITY** up front. We collaborate with customers to replace non-recyclable multi-material packaging with recyclable packaging made with polyethylene. For example, our high-density biaxially oriented polyethylene (BOPE-HD) resin technology enables fully recyclable packaging for an expanded range of products without sacrificing performance. It is ideal for use in food packaging, heavy duty sacks, e-commerce, and other demanding applications. Developments like BOPE-HD are critical to achieving industry commitments to make all plastic packaging reusable, recyclable, or recoverable. We are working with Brückner Maschinenbau, the world's leading stretching line manufacturer, to accelerate the development and commercialization of this technology.

## 5 Advanced Recycling



**ADVANCED RECYCLING ADDRESSES THE HARD-TO-RECYCLE SEGMENTS OF PLASTIC WASTE** through technologies such as gasification or pyrolysis, converting plastic waste to feedstocks for new plastic production. We are investigating pyrolysis technology and continue our work with Enerkem, the first company in the world to produce renewable methanol and ethanol from non-recyclable, non-compostable municipal solid waste at full commercial scale. Together, we are partnering to scale up this game-changing technology to transform hard-to-recycle municipal waste, including plastics and other items such as household waste and construction materials, into feedstocks that can be used to manufacture new plastics. Using advanced recycling feedstocks to produce polyethylene would help meet industry goals for recycled content in packaging. We intend to start construction of a pilot scale reactor in 2022.

## 6 Collaboration for a World Free of Plastic Waste



**WE ARE COMMITTED TO WORKING WITH OTHERS IN THE GLOBAL COMMUNITY** to proactively prevent plastic pollution and build a circular economy. We invest and participate in projects with global reach that strengthen our positive impact as global citizens and contribute to shaping a world that is even better tomorrow than it is today. Through our investments, we aim to contribute to innovation, infrastructure, education, and cleanup efforts. See the next page for highlights of our work with **Alliance to End Plastic Waste®**, **Closed Loop Circular Plastics Fund**, **Great Lakes Plastic Cleanup (GLPC)**, and **Pet Sustainability Coalition**.



## Collaborating to Prevent Plastic Waste



### Alliance to End Plastic Waste

We continue our partnership with the [Alliance to End Plastic Waste](#) (Alliance). Since 2019, the Alliance has funded and approved over 35 major projects in 29 countries, supporting communities to build sustainable waste management systems that fit their needs. With three billion people worldwide still lacking access to adequate waste management services, the Alliance's portfolio has diverted and recycled a total of approximately 4,000 metric tons of plastic waste, reflecting the commitment of its 90 member companies and partners.



### Flex Forward® Program

We continue our role as technical sponsor of Pet Sustainability Coalition's [Flex Forward](#) pet food packaging recycling pilot. The objectives of this pilot are to investigate ways to decrease the current landfill rate (99 percent) of plastic pet food and treat bags by incorporating the material back into new products and to provide circular solutions for flexible packaging for consumers, retailers, and packaging manufacturers.



### Great Lakes Plastic Cleanup

NOVA Chemicals continued its lead corporate sponsorship of the [Great Lakes Plastic Cleanup](#) (GLPC), an initiative of Pollution Probe and the Council of the Great Lakes Region. GLPC aims to combine innovative capture and cleanup technologies to remove plastics from the Great Lakes and to promote public awareness of plastic pollution. Focused on the North American Great Lakes regions, the GLPC enables the largest deployment of Seabin® and LittaTrap® cleanup and capture technology in the world to ensure the long-term environmental health of this important water system.



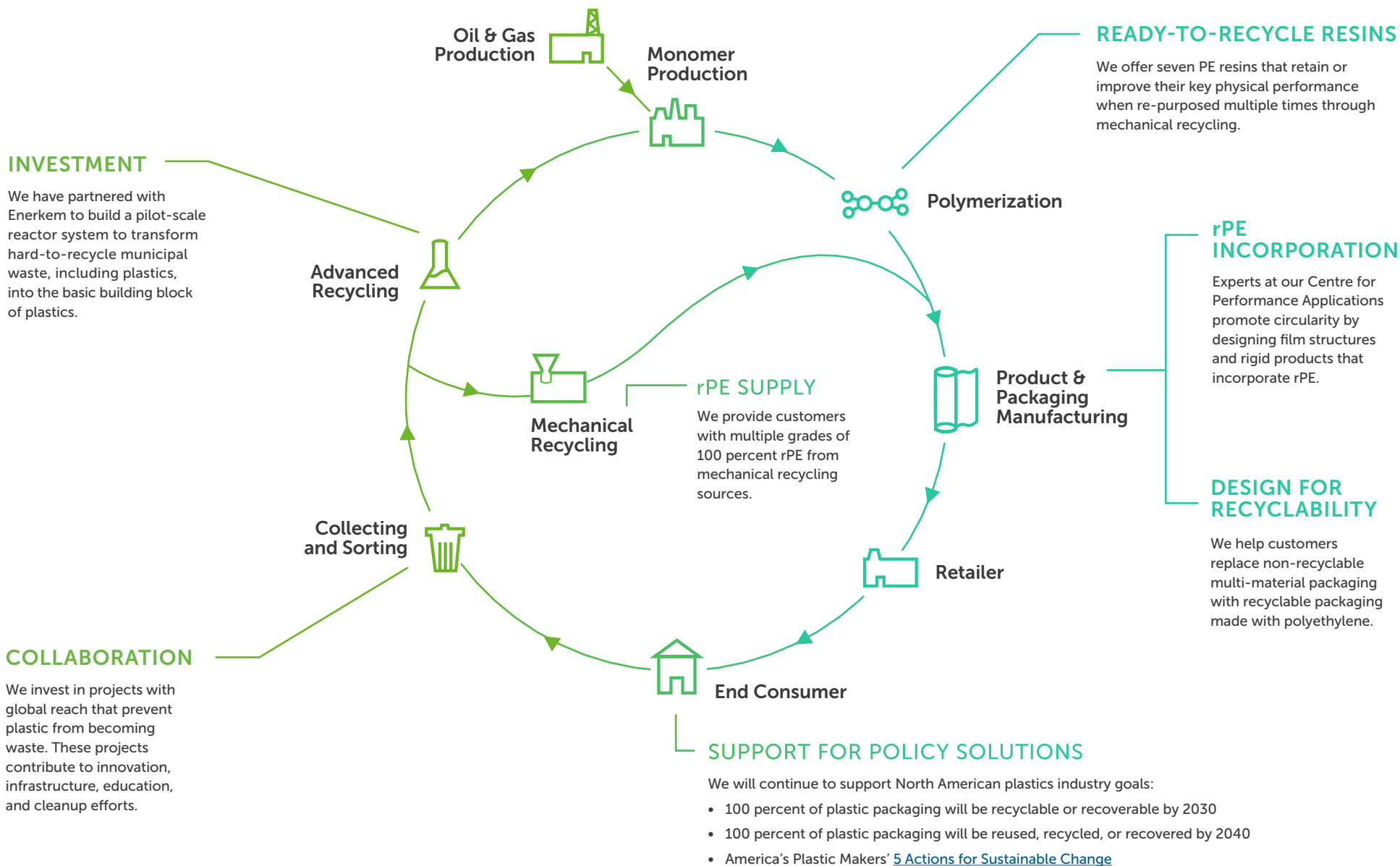
### Closed Loop Circular Plastics Fund

We are a founding member of the [Closed Loop Circular Plastics Fund](#) (CPF) which was established in 2021 to catalyze capital to drive a circular economy, advance the recovery of hard-to-recycle plastics, and eliminate plastic waste in the U.S. and Canada. The fund has a goal to deploy a \$100 million (USD) investment and aims to recycle over 500 million pounds of plastic over the fund's lifespan. In March 2022, the CPF closed its first investment by joining a consortium of investors in acquiring a majority stake in Sims Municipal Recycling (SMR).



## NOVA Chemicals' role to support the Plastics Circular Economy

We are building our expertise and developing new products and solutions that contribute to plastics being reused and recycled as many times as possible.





## 2021 Activities

### 100 PERCENT rPE RESINS

In 2021, we introduced our first grades of 100 percent rPE from distribution center or agricultural film feedstock. Available in commercial volumes, our rPE grades are ideal for a range of flexible film applications that can help customers meet brand owners' sustainability commitments. Application opportunities include collation shrink and stretch wrap, agricultural films and heavy-duty shipping sacks, and trash bag liners, among others. In October 2021, we achieved a milestone, delivering railcar quantities of rPE.

### APPLICATIONS THAT CONTAIN rPE

In 2021, we debuted a series of customizable film structure designs formulated with rPE. The film structures can be tailored to meet the demands of many different film applications including heavy-duty sacks, collation shrink, stretch film, agricultural film, trash bags and liners, bubble wrap, and air pillows.

### RESINS THAT SUPPORT MORE RECYCLABLE PACKAGING

In 2021, we introduced a new PE resin (HPs267-AB) with market-leading moisture barrier performance that enables replacement of mixed-material packaging (metallized or PET-laminate non-recyclable films) with recyclable, PE-

based designs. This resin enables packaging engineers to design a wide range of food packaging films that protects contents from contamination and spoilage without sacrificing moisture barrier performance, toughness, or recyclability.

### COLLABORATION TO PROMOTE CIRCULARITY

We continue our partnership with the [Alliance to End Plastic Waste](#). We also invest in other regional organizations, such as the Great Lakes Plastic Cleanup initiative (see [page 16](#) for details), or fund internal projects toward similar goals.



## BONFIRE® FILM DEVELOPMENT PLATFORM – SUPPORTING SUSTAINABLE PACKAGING DESIGN

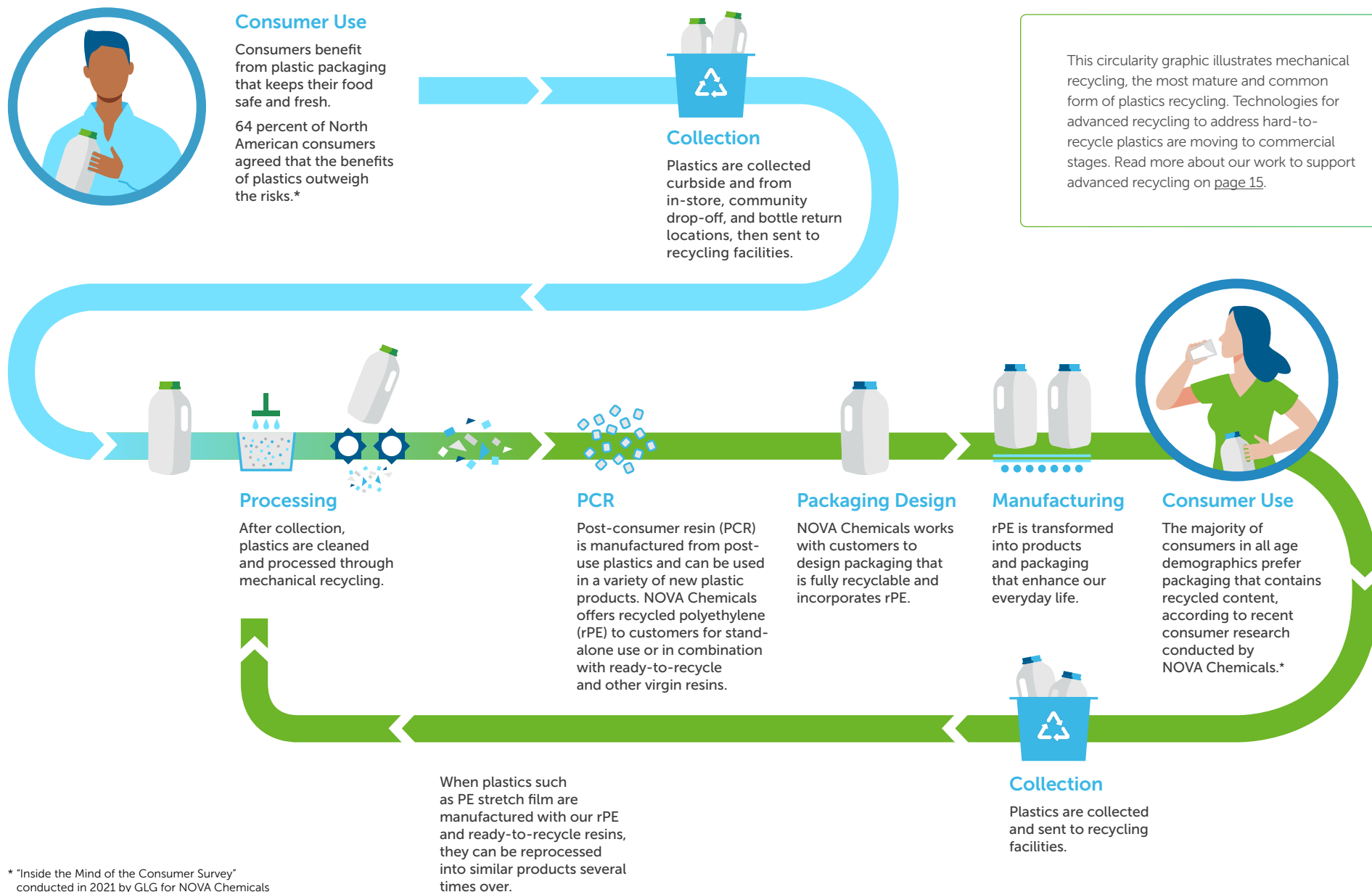
Better packaging design needs better tools — so we launched the latest update of our BONFIRE Film Development Platform in 2021. Version 5.0 of this free virtual tool contains new modules and enhancements that expand how the platform helps packaging designers test new ideas and get them to market faster. Its web-based tools enable users to virtually build complex, multilayer film structures, evaluate their predicted performance properties and incorporate qualities that would make the resulting packaging material more sustainable.

The BONFIRE Film Development Platform can help customers improve the sustainability of their design in three ways. Customers can design:

- Recyclable packaging that replaces mixed-material structures with 100 percent PE with comparable performance
- Packaging that incorporates rPE
- Downgauged packaging that reduces the material required per unit while meeting the same performance requirements

## What Does Circularity Look Like?

From milk jugs to bottle caps – how the plastics circular economy works.



\* "Inside the Mind of the Consumer Survey" conducted in 2021 by GLG for NOVA Chemicals

# GHG Emissions

NOVA Chemicals is committed to driving decarbonization. We are developing our roadmap to decarbonization utilizing renewable energy; carbon capture, utilization, and storage (CCUS); clean hydrogen; and game-changing technology. We have a track record of continuously improving energy efficiency in our operations.

## How We Generate GHG Emissions

The vast majority of our GHG emissions (~99 percent) are carbon dioxide from combustion, with the remainder composed of methane and nitrous oxide. Our operations generate GHG emissions in the following ways:



**SCOPE 1:** The large majority (95 percent) of our Scope 1 GHG emissions are a result of the ethylene manufacturing process. Ethylene is one of the most important raw materials in the petrochemical industry as it is a building block for many other chemical products. We produce ethylene by processing light hydrocarbons derived from natural gas. Ethylene is the foundation for our main product, polyethylene.

**SCOPE 2:** For our manufacturing processes, the majority of electricity we use comes from natural gas-fired cogeneration, which produces both power and steam for our operations. Cogeneration is very reliable and more efficient than stand-alone fossil fuel-based power generation. We also require electricity to power our manufacturing and research facilities and offices.

**SCOPE 3:** We are continuing to refine our Scope 3 emission quantification methodology and approach. In support of these improvements, we are working to refine the most material aspects of the emissions profile. We've also initiated work with our supply chain partners to identify opportunities to influence and manage Scope 3 emissions in the future.



## Why is it important for us to reduce our GHG emissions?

By reducing GHG emissions from our operations, we can mitigate our contributions to climate change, realize energy efficiency savings, and reduce our compliance costs.



## Management Approach: How We Manage GHG Emissions

We are focused on driving decarbonization through harnessing new and emerging technologies and optimizing the efficiency of our current assets.

### DEVELOPING OUR DECARBONIZATION ROADMAP

Paths to decarbonization vary between sectors and industries, but common elements include carbon capture, electrification, shifting to cleaner or clean fuels, and energy efficiency and process improvements. Our Climate Solutions Team is considering the following options as they develop a decarbonization roadmap for NOVA Chemicals:



#### Safe and high-performing operations:

Alongside exploring new technologies, we continue our focus on optimizing the efficiency of our current assets in the following ways:

- **Operational improvements:** We look for opportunities to make equipment upgrades and process improvements that increase our efficiency and lead to lower GHG emissions. See [page 22](#) for 2021 progress in this area
- **Cogeneration:** In Alberta and Ontario, we currently obtain electricity produced from cogeneration facilities that use natural gas to generate electricity and steam, resulting in lower GHG emissions compared to stand-alone electricity and steam production. Cogeneration also provides a reliable electricity supply that is important for maintaining the stable operation of our production facilities. We are also looking for technologies that will meet our long-term electricity and steam needs

- **Flaring reductions:** To upgrade our manufacturing technology, conduct repairs, and perform maintenance, we occasionally shut down production which necessitates hydrocarbon flaring. We work to minimize flaring in the safe shutdown and subsequent startup of production processes. Our continuous improvement processes include the use of process optimization to reduce flaring and the deployment of advanced process controls to better control flares
- **Fugitive emissions program:** While our fugitive emissions of methane are a small contribution (less than 1 percent) to our total GHG emissions, we focus on reducing the release of methane and other hydrocarbons because methane has a much higher global warming potential than carbon dioxide (CO<sub>2</sub>), and for process safety in our operations. At all our facilities, we have leak detection and repair (LDAR) programs to control all hydrocarbon leaks, including methane. Our LDAR program includes maintaining a detailed inventory of all potential leak sources from valves, flanges, and connections at our facilities; monitoring each component; and then repairing any identified leaks



#### Carbon Capture, Utilization and Storage (CCUS):

CCUS provides opportunities to capture CO<sub>2</sub> streams from our operations and permanently store this CO<sub>2</sub> to prevent its escape into the atmosphere.



**Blue hydrogen:** Our existing facilities were designed to use fossil fuels to provide most of the energy required to manufacture our products. Unlike fossil fuels, hydrogen combustion does not generate carbon dioxide emissions, and so it can be used as a low carbon emissions fuel to replace natural gas. Blue hydrogen refers to hydrogen production from natural gas feedstock combined with the capture of the CO<sub>2</sub> emissions when hydrogen is produced. We are evaluating the use of blue hydrogen as a way to decarbonize our ethylene cracking process.



#### Renewable power and electrification:

Our commitment to decarbonizing our operations doesn't stop at our direct emissions. We are actively seeking opportunities to enhance our already efficient approaches to power generation for our sites by adding renewable power sources, either through direct purchases or other agreements. Access to more decarbonized power also allows for the electrification of certain equipment in our operations, reducing our use of fossil fuels.



**Emerging technologies:** Emerging technologies remain a key area of focus for our forward-looking decarbonization strategy. Our Climate Solutions Team, alongside our Innovation Teams, continues to engage with industry and academia to evaluate new and innovative technologies that have the potential to further enhance and enable our decarbonization plans.

## 2021 Activities

### PROGRESSED OUR DECARBONIZATION ROADMAP

In 2021, NOVA Chemicals continued to build its roadmap to drive decarbonization with a focus on energy efficiency; renewable energy and electrification; carbon capture, utilization and storage (CCUS); clean hydrogen; and other technology solutions.

### ESTABLISHED A CLIMATE SOLUTIONS TEAM

In 2021 we established a dedicated Climate Solutions Team to support our aspirations to decarbonize our operations. The initial focus for the team has been to develop a decarbonization roadmap which will identify the key elements to support this strategy. This team will also track any advancements in this arena and integrate them into the roadmap as appropriate in the future.



### EMPLOYEES FINDING WIN-WIN SOLUTIONS

A cross-functional NOVA Chemicals team has dedicated years of research, testing, and collaboration to developing technology that extends the length of time that olefins cracking furnaces can run without de-coking (removing carbon), an energy- and water-intensive process.

Our team has been granted five patents for this technology and four more are pending. The run length of furnaces with this technology far surpasses the newest and most technologically advanced plants.

This accomplishment — the result of passionate employees working to continually improve — results in significant productivity gains and operational efficiencies that lead to reduced emissions and water use. The technology also helps to reduce waste through fewer furnace coil replacements.

### COLLABORATED TO REDUCE EMISSIONS AND IMPROVE PERFORMANCE

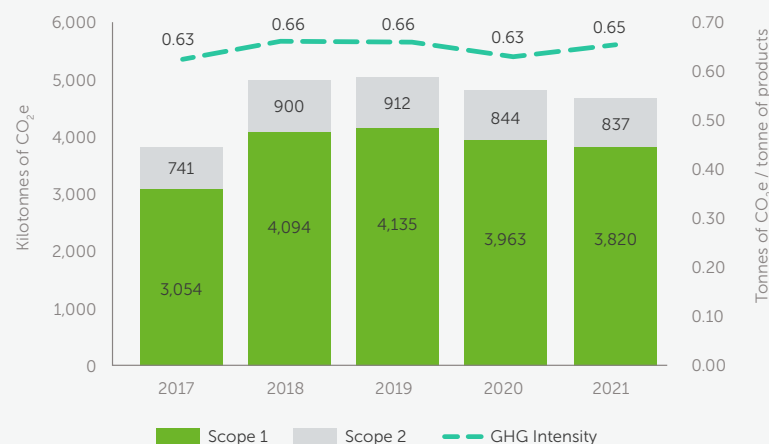
Our frontline employees continue to engage in optimization and problem solving, collaboratively developing solutions that have significant sustainability and performance benefits. For example, in 2021 our Corunna team identified a variation in how liquid fuel was used to supplement natural gas for two boilers, which is necessary to meet their maximum operating capacity, and protect boiler and plant reliability. Problem solving efforts and standardization of boiler operation resulted in a 93 percent reduction in liquid fuel use, leading to a 12 percent reduction in GHG emissions, a 90 percent reduction in SO<sub>2</sub> emissions, a 20 percent reduction in NO<sub>x</sub> emissions and nearly \$6 million per year in cost savings.

### ADVANCED VISIBILITY OF OUR GHG PERFORMANCE

In 2021, our manufacturing team created a tool to view real-time GHG emissions performance of ethylene and polyethylene plants at our Joffre site. The hourly readings help visualize the impact that operational choices have on GHG emissions and compliance costs. We anticipate applying this tool at our other manufacturing sites to further support continual improvement and making monthly GHG performance for each site available to employees, plant operators and technical staff, leaders, and executives in 2022.

### Our Performance

### GHG Emissions (operational control)



*In the last five years, our absolute emissions have increased by 23 percent, primarily due to the acquisition and addition of our Geismar, Louisiana, facility in 2018. Our GHG intensity increased slightly in 2021 due to reduced production levels resulting from a series of plant shutdowns.*

# Air Emissions

Preserving regional air quality is essential to being a good neighbor and protecting the health of our employees and community members.

## Management Approach: How We Manage Air Emissions

Air quality is measured by the concentration of air pollutants, which include but are not limited to oxides of nitrogen (NOx), sulfur dioxide (SO<sub>2</sub>), volatile organic compounds (VOCs), hazardous air pollutants (HAPs), and particulate matter (PM). In most cases, air emissions are regional issues, so we manage them at the facility level by optimizing our operational performance in the following ways:

### REDUCING FLARING

Our process optimization and advanced process control strategies help us to reduce flaring, driving down VOCs and other associated air emissions.

### TAILORING TECHNOLOGIES TO OPERATIONAL NEEDS

Our facilities incorporate a variety of approaches to reduce air emissions, which can include:

- Conversion of facility feedstock and fuel supplies to cleaner alternatives
- Use of low-NOx burners to reduce NOx at the combustion stage

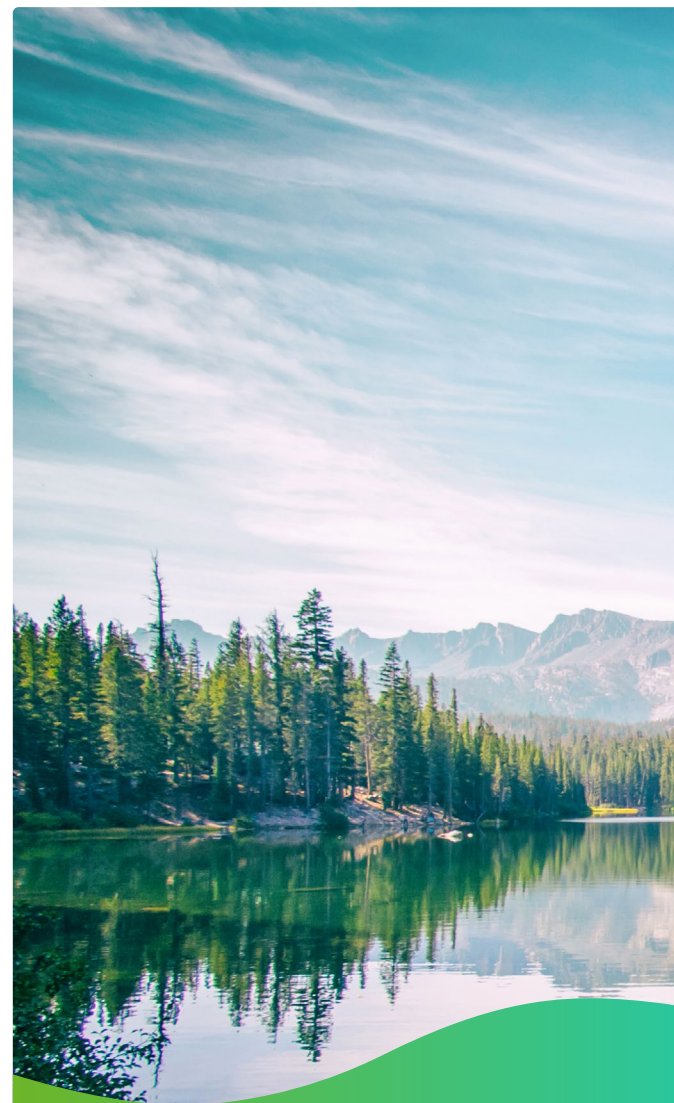
- Use of selective catalytic reduction technology, which reduces the levels of NOx from exhaust gas by having it react with a catalyst
- Use of thermal oxidizers that use high temperature to reduce HAPs and VOCs

### DETECTING AND REPAIRING LEAKS

Each of our manufacturing facilities has a Leak Detection and Repair (LDAR) program to identify and inventory fugitive emissions from sources including valves, flanges, and connections. Monitoring, repair, and reporting activities are completed in accordance with regulatory requirements for each location. The identification and repair of VOC leaks prevents emissions to the environment and reduces the risk of flammable loss of containment.

### ADAPTING TO REGULATIONS

We operate in accordance with air emissions regulations in the regions where we operate. The [Multi-Sector Air Pollutants Regulations](#) (MSAPR) apply to our Canadian facilities and require investments to reduce the rate of NOx emissions from some of our boilers and heaters in Ontario.



## Why is it important for us to manage our air emissions?

Regional air quality is important to our employees, community members, and regulators, and air emissions are being increasingly regulated.



## 2021 Activities

In 2021 we undertook the following activities to further reduce air emissions from our sites:

### FLARE REDUCTION AT JOFFRE, ALBERTA

While progress on the flaring reduction project at our polyethylene facility in Joffre was slower than planned, we were able to make facility upgrades in late 2021 that were commissioned early in 2022. We next plan to test the flare recovery modifications in 2022. When complete, we anticipate that this project will help reduce VOC emissions and have ancillary benefits for GHG and NOx reductions.

We are starting to see results from changes in our fugitive emissions reduction program at Joffre. We saw a 53 percent reduction in the fugitive emission leak rate and a 25 percent reduction in the total reported VOC fugitive emissions due to an increased focus on making immediate repairs, which is more efficient than the previous planning approach to manage repairs.

### NOx REDUCTION PROJECT AT SARNIA, ONTARIO

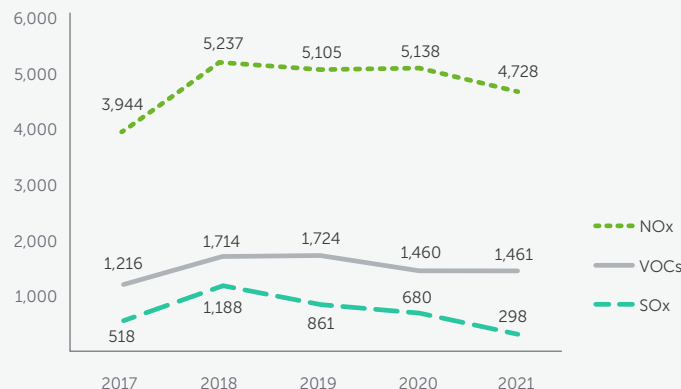
To ensure that our boilers and heaters comply with MSAPR regulations (see [page 23](#)) we launched a multi-year project for NOx emissions reduction in 2021. The project includes:

ACTIVITY	STATUS
Evaluation of NOx reduction technologies	Completed
Rigorous emissions testing of boilers and heaters covered by the regulations to establish a baseline for NOx emissions	Underway
Selection of emissions reduction technologies to match boiler and regulatory requirements	Pending

## Our Performance

### Air Emissions

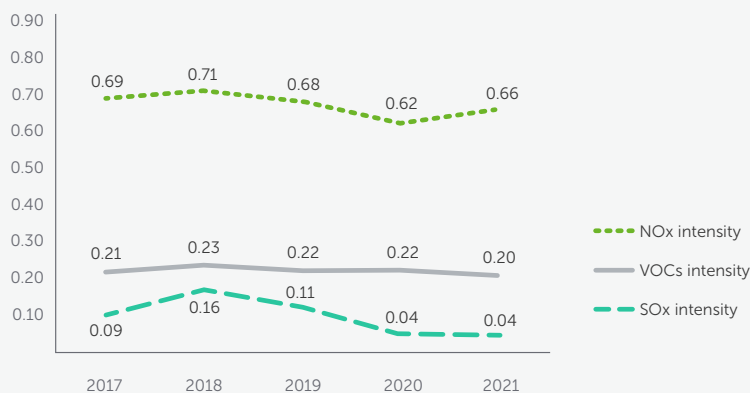
(tonnes)



Over the last five years, our NOx and VOC emissions intensity have increased due to the acquisition of our Geismar site in 2018. Our annual SOx emissions (absolute and intensity) variations are due to operational changes and refinements in the estimation methodology.

### Air Emissions Intensity

(kg/tonne of product)



# Waste

We work to develop solutions that promote a circular economy through waste prioritization, management, prevention, and reuse efforts. We continue to champion zero pellet loss at our sites and in our supply chain.

## OUR TARGET

We aim to maintain our annual performance of zero plastic pellet loss to the environment from our facilities.

### What does our target mean?

Zero plastic pellet loss means that no resin pellets are spilled during manufacturing or transportation. This target aligns with our view that plastic does not belong in the environment. For the last three years, we have experienced zero plastic pellet loss and we want to maintain that performance.

used oils, and a variety of other types of waste. Some of our wastes contain chemical compounds that must be separated or treated before they can be safely disposed of.

## WASTE HIERARCHY

We developed a waste management hierarchy (based on work by the U.S. Environmental Protection Agency) as a tool to rank our options for managing waste. Our goal is to move as many waste streams, and as much volume as possible, toward the top of the waste hierarchy (prevent, reuse, recycle) and away from disposal of any kind.

## WASTE PRIORITIZATION

To develop reduction strategies, we prioritize waste streams based on risks and opportunities. For example, volume is not the only consideration when prioritizing waste. We also include factors such as hazardous versus non-hazardous characteristics, transportation distance from our site to final disposal, the current disposal method, and the potential for reuse, recycling, or energy recovery.

## WASTE PREVENTION

We are continually finding ways to recycle the scrap PE we produce to prevent it from becoming waste. More than 99 percent of our scrap PE is recycled.

## How We Manage Operational Waste

Our manufacturing process generates a variety of wastes. We occasionally produce scrap polyethylene, which is fully recyclable and is used by other companies to create final plastic products. Our largest waste category is unusable by-products from manufacturing, which includes waste residues and sludges, filtration media, spent catalysts,



## Why is it important for us to manage our waste?

Focusing on waste elimination helps improve the efficiency of our facilities and reduces the costs and risks associated with waste handling, transportation, and disposal.

## WASTE REUSE

We look for opportunities to find value-added uses for some of our waste streams. For example, spent alumina from our St. Clair site is used as an additive for cement. See the sidebar for details on one of our spent lime/phosphate by-product recycling initiatives.

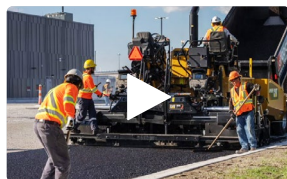
## CHAMPIONING ZERO PELLET LOSS

We have pledged support to Operation Clean Sweep™ (OCS), a campaign to prevent plastic pellets, powder, and flake loss at plastic-handling facilities. As a Responsible Care company and resin producer, NOVA Chemicals shares the view that plastic does not belong in the environment. Keeping plastic products out of the environment, starting with preventing pellet loss at our sites and in our supply chain, is a top priority.



## PAVING THE WAY TO CIRCULARITY

In November 2021, NOVA Chemicals and GreenMantra Technologies completed an asphalt paving project at the construction site of our newest polyethylene manufacturing facility near Sarnia, Ontario, Canada. The project incorporated a polymer additive made from the equivalent of 700,000 plastic bags into two pathways and a parking lot. GreenMantra Technologies manufactures this additive from post-consumer recycled plastics. The additive boosts the performance of the asphalt and delivers stronger, more durable roads. Together, we are finding new solutions to divert plastic waste from landfills and create a circular economy for plastic materials.



## 2021 Activities

### WORK TOWARDS ZERO PELLET LOSS

We continued to align our operational practices at all sites with OCS best practices. These practices target “zero pellet loss” which means that no resin pellets are allowed to leave the facility unless they are packaged for transport to customers or properly recycled. In 2021, we implemented behavioral and procedural changes to reduce pellet spills, purchased mechanical sweepers for more effective and efficient cleanup, and held quarterly audits to identify areas for improvement. We will report on our progress in future reports.

### A CIRCULAR APPROACH TO OPERATIONAL WASTE

We continued to implement waste optimization programs at many of our sites and were able to divert more than 18,000 tonnes through the following programs:



### WASTE (TONNES) 2021

Non-hazardous waste	27,090
Non-hazardous waste reused	15,010
Hazardous waste	6,595
Hazardous waste recycled	12

Spent lime/phosphate by-product is our largest non-hazardous waste stream. A significant portion of this by-product is sent to be used for soil enhancement. Hazardous wastes require special treatment in alignment with Responsible Care and regulatory requirements that influences whether recycling is viable.

### 2021 IMPACT

### ACTIVITY

**7,061** tonnes  
of scrap PE recycled

All scrap polyethylene (PE) is sent to a processor of post-industrial plastics for use in manufacturing, either directly or following processing, into recycled pellets.

**1,164** tonnes  
of PE diverted from  
landfills

At some of our sites, we generate PE waste (composed of lumps and strands) during production changeovers. A plastics company safely processes the lumps and strands from our St. Clair River and Moore sites and recycles them.

**1,252** tonnes of  
spent alumina diverted  
from landfill

We use alumina (aluminum oxide) in our operations. Although we reuse the alumina, it loses its properties over time. Since 2018, we have sent spent alumina to an industrial company to be used in making cement. Alumina has rapid hardening properties and enhances cement for marine construction, sewer infrastructure, and structural concrete applications.

**9,076** tonnes  
spent lime/phosphate  
by-product diverted  
from landfill

Some of our sites generate spent lime/phosphate by-product which is a recyclable waste stream. Our Joffre, Alberta, site makes this material available for use as a soil enhancement by landowners in the local area. This application of the spent lime/phosphate material enhances the soil properties of locally acidic soils and keeps this by-product out of area landfills.



# Water

Water plays an important role in our manufacturing processes. To protect this valuable resource, we reuse water when feasible, test and treat water returned to the environment, and are increasing our understanding of our operations and risk management options in water-scarce regions.

## OUR TARGET

Develop a strategic water roadmap by 2025 that will identify actions that can help us reduce water use or improve our water efficiency in our operations.

## What does our target mean?

In the next few years, we will be gathering and reviewing our organizational water data to better understand our water risks (scarcity) and opportunities (equipment or process efficiencies). After that, we plan to identify operational and facility actions that can help us reduce water use or improve our water efficiency in our operations.

## How We Manage Water Use and Quality

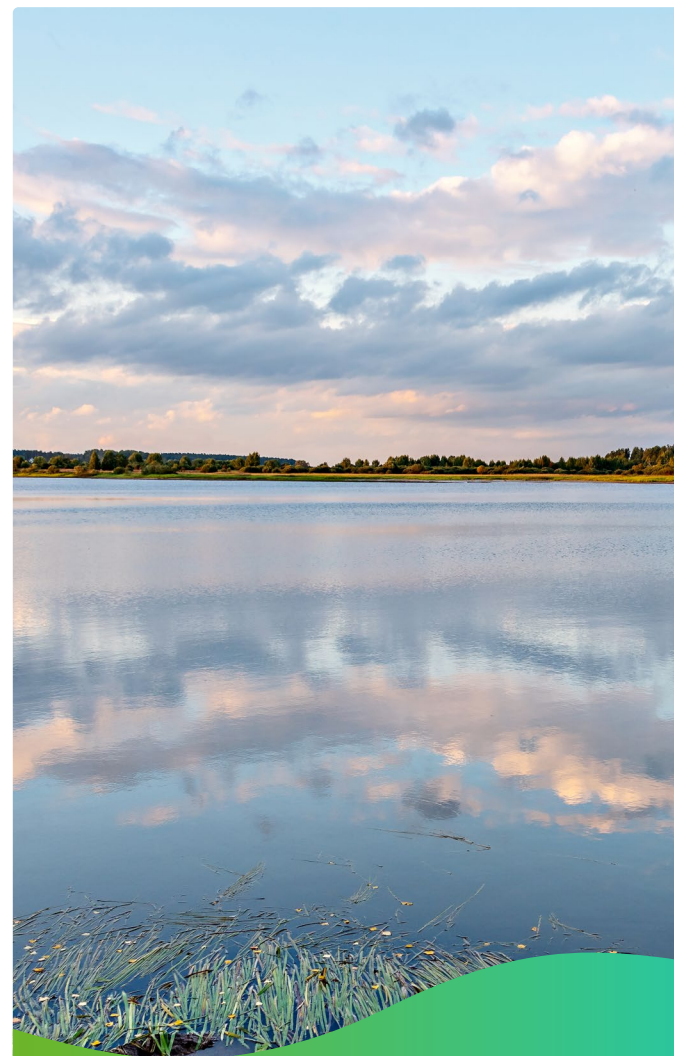
We require water in our manufacturing processes, especially for cooling and generating steam. We withdraw the water we require for our industrial processes from the St. Clair, Red Deer, and Mississippi rivers.

NOVA Chemicals' Water Aspect Team guides our corporate approach to water management. The team is composed of

environmental and technical specialists representing all manufacturing facilities as well as corporate innovation and environmental affairs personnel. The team's responsibilities include identifying and mitigating water-related risks; promoting the conservation, recycling, or reuse of water; minimizing water-related environmental impacts; and facilitating water optimization projects across the company.

## Why is it important for us to manage our water use?

Water is an important shared resource for NOVA Chemicals and the communities we serve. By minimizing water use and preserving water quality, we ensure the availability of this shared resource for years to come.



Our water management strategies include:

#### WATER REUSE

At our Joffre site, we have four stormwater retention ponds that allow us to capture and use surface runoff from precipitation captured within the facility fence line. Water from these retention ponds is softened and clarified before being reused in our operations and accounts for around 5 percent of annual site water use.

#### MINIMIZING WATER USE

Our internal project design and review processes consider how we use water at our facilities. In addition, since much of the water we use is related to cooling, ongoing initiatives to improve our energy efficiency and reduce the heat load on our facilities also improve water efficiency.

#### WATER TESTING AND TREATMENT

Most of the water we use is returned to the environment, often through evaporation from cooling towers. Before being returned to surface water bodies, it goes through testing and treatment in alignment with regulatory requirements and environmental standards.

#### UNDERSTANDING WATER AVAILABILITY

Water availability varies across the different regions in which our manufacturing facilities operate. This can create challenges in how we prioritize water use and conservation. We recognize the need to further understand water risks and advance our efforts related to water use. We are committed to developing a strategic roadmap for water use opportunities and improvement actions for all our sites by 2025.

### 2021 Activities

Our Water Aspect Team oversaw progress on several major initiatives in 2021, including:

#### WATER RISK ASSESSMENT

We completed a water risk assessment for all manufacturing locations. Using water risk indicators from World Resources Institute's Aqueduct database, we assessed baseline, 2030, and 2040 water risks for each operating facility. The assessment will be an important reference for risk-based decision-making related to water use and will inform future water risk disclosures. Our initial findings show that 37 percent of the water we withdrew in 2021 came from areas with high or extremely high baseline water stress. Baseline water stress measures the ratio of total water withdrawals to available surface and groundwater supplies. A higher ratio indicates more competition among users; it does not necessarily mean water scarcity.



#### WATER (M<sup>3</sup>) 2021

Water withdrawn	40,150,000
Water discharged	21,260,000

Most of the water we withdraw is used for cooling and generating steam. A significant amount is returned to the watershed through evaporation from our cooling towers and water retention ponds.



# SOCIAL

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Talent Management 46 >

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Community Relations  
and Investment 50 >

At NOVA Chemicals, we are working towards a more inclusive working environment, and we continue to advance the development and well-being of our people. We have a responsibility to ensure the safety of our employees, contractors and visitors, customers who handle and use our products, and communities near our operations and transportation routes. Through the execution of our growth plans and our community investment efforts, we seek to create a positive impact in the communities where we live and work.



# Inclusion and Diversity

Our vision is to be an agile, high-performing team of employees who feel they belong, are engaged, and represent the communities in which we live and work.

## OUR TARGET

By the end of 2030 we aspire to achieve a:

**10%** increase in diversity across all levels of the organization from our 2020 baseline

**30%** representation of women across all levels of the organization

**5%** increase in representation of people of color in leadership from our 2020 baseline

**10%** increase in women in leadership from our 2020 baseline

## What does our target mean?

This means that we will enhance our hiring and engagement practices to foster an inclusive culture where everyone feels welcome. We will manage and maintain an employee diversity census to monitor progress towards our targets. We acknowledge that there are many dimensions of diversity and are starting with age, gender, race, sexual orientation, and disability status, as those populations are traditionally underrepresented in our company and industry.

In 2021:

- 45 percent of NOVA Chemicals' workforce were women, people of color, persons with disabilities, or a sexual minority
- 25 percent of NOVA Chemicals' workforce were women
- 15 percent of leadership were people of color
- 23 percent of management were women



## Why is it important for us to foster inclusion and diversity?

In addition to being the right thing to do, promoting an inclusive and diverse workplace can help NOVA Chemicals be a more desirable place to work, help attract and retain top talent, and improve overall company performance.

## Management Approach: How We Foster Inclusion and Diversity

NOVA Chemicals is committed to building an inclusive and equitable culture and achieving diverse representation in our workforce. Our Inclusion and Diversity Strategy, developed in 2020, establishes clear aspirations for an inclusive and diverse workplace. Five strategic pillars guide our activities:

### 1. BUILD AN INCLUSIVE CULTURE

We promote a caring and inclusive environment where leaders foster openness and belonging so that every employee can bring their full selves to work.

### 2. ATTRACT AND RETAIN DIVERSE TALENT

We work to develop a robust talent pipeline and inclusive hiring and promotion practices to ensure that NOVA Chemicals is highly sought after, and that employees feel valued and are treated fairly in compensation and progression. In 2020, we established a baseline for multiple aspects of diversity (e.g., gender, disability status) that will allow us to measure our progress.

### 3. DIFFERENTIATE THE EMPLOYEE EXPERIENCE

We develop and implement policies, programs, and flexible benefits that serve the needs of diverse groups. For example, we have long supported employee participation in informal development networks such as The NOVA Network (an internal volunteer network that provides development opportunities) and the Ellevate Network® (an external, global networking and development community program for professional women).

## Our Performance

### Women at Various Levels

(percent)

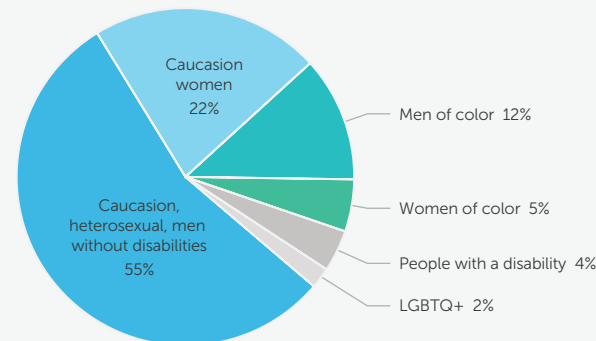


*In the last year, we saw a decline in women at the executive level, but an overall increase in women in management positions.*

*We have laid the groundwork for change with our Inclusion and Diversity Strategy and will work to improve these trends as we mature our culture of inclusion.*

## Diversity Representation

(based on 2021 survey)



*Based on the survey we conducted in January 2021, more than half of our workforce is male, Caucasian, and without disabilities. We acknowledge that all individuals live at the intersection of many different identities; this chart is not representative of all layered identities.*

#### 4. MAINTAIN ROBUST INCLUSION AND DIVERSITY GOVERNANCE

We have established formal inclusion and diversity (I&D) roles, responsibilities, and accountability structures and will regularly measure against progress. Key features include:

- a. We have a formal Inclusion and Diversity Council composed of 12 employee volunteers who work to develop support structures that foster diversity and a sense of belonging for all employees. See [page 33](#) for details.
- b. The [Business Conduct Policy](#) (our code of conduct) outlines our responsibilities and expectations for workplace behavior.
- c. Questions or concerns can be raised through NOVA Chemicals' Ethics Line (a 24-hour confidential and anonymous helpline) and EthicsPoint® (our online reporting system).

#### 5. ENGAGE WITH THE COMMUNITY AND EXTERNAL PARTNERS

We strive to establish ourselves as a recognized champion of change across our supply chain and in the broader community.



### 2021 Activities

In 2021, we focused on establishing key I&D governance mechanisms and training requirements for leaders in I&D principles, and identifying opportunities to formally promote an inclusive culture. A summary of our 2021 progress in each of the pillars of our I&D Strategy is below.

Looking forward, we intend to roll out employee I&D training, develop an I&D dashboard, advance networking opportunities for underrepresented groups, and develop a talent pipeline through targeted school partnerships.

PILLAR		2021 ACCOMPLISHMENTS
1	<b>Build an inclusive culture</b>	<ul style="list-style-type: none"> <li>Communicated the link between I&amp;D changes and NOVA Chemicals' vision</li> <li>Began to train members of the Inclusion and Diversity Council and HR practitioners on "Diversity, Equity, &amp; Inclusion" to establishing a baseline of knowledge in our focus areas</li> </ul>
2	<b>Attract and retain diverse talent</b>	<ul style="list-style-type: none"> <li>Began posting roles on niche recruiting websites to reach a broader, more diverse audience</li> <li>Enhanced education for hiring teams on preventing bias</li> <li>Began work to debias gendered language in our materials</li> </ul>
3	<b>Differentiate the employee experience</b>	<ul style="list-style-type: none"> <li>Introduced gender pronouns for email signatures</li> <li>Began to formalize existing networks and explored potential for employee resource groups</li> </ul>
4	<b>Develop robust inclusion and diversity governance</b>	<ul style="list-style-type: none"> <li>Developed and began to track quantifiable measurements of inclusion and diversity</li> <li>Formed an Inclusion and Diversity Council</li> <li>Established six subcommittees to focus on key initiatives</li> </ul>
5	<b>Engage with the community and external partners</b>	<ul style="list-style-type: none"> <li>Explored ways to promote diversity in our supply chain</li> <li>Identified external partners to help assess our suppliers' inclusion and diversity</li> </ul>



In 2021, our leaders deepened their knowledge about bias and how to engage their teams fully. In 2022, employees will receive training on conditions to promote a stronger sense of belonging, what barriers to belonging may be present, and how to be a champion for oneself and for others.



## Our Inaugural Inclusion and Diversity Council

In 2021, NOVA Chemicals announced our inclusion and diversity program with a three-year plan to enhance our culture, become more inclusive, and increase our diversity. To guide and support this important work, we instituted our **first Inclusion and Diversity Council**. Twelve volunteers from NOVA Chemicals will serve alongside two executive members to help develop and implement inclusion and diversity initiatives and track progress towards our goals.

COUNCIL MEMBER	ROLE AT NOVA CHEMICALS
Ali Pour	Leader, Planning and Capital
Amr Abdrabo	Engineering/Operations & Innovation
Amy Breathat	Team Leader, Process Safety
Christian Cajina	Millwright, Mechanical
Christi Populus	Document Control, Operations and Innovation
Dawn Williams	Leaders, SCRS Production
David Ting	Analyst, Business Improvement
Jackie Harbidge	Administrator, Sales and Marketing
Janelle Smiley-Wiens	Coordinator, Technical Scale Facilities
Lou Krzemien	Chief Compliance Officer and General Counsel
Marcia Pires Fortes Ferreira	Scientist, Product Development Research
Tinisi Cooper	Responsible Care Specialist, Operations and Innovation
Luis Sierra	Chief Executive Officer
Mona Jasinski	Senior Vice President, Human Resources and Communications

## Meet four of our volunteer Council members:



"As a visible minority and female engineer, I have had my struggles with

stereotypes and feeling like I didn't fit in. I want to help embed inclusion and diversity principles into our processes so they can be sustained into the future."

AMY BREATHAT



"I want to be involved in the Council because we have an amazing

opportunity to create a culture that truly embodies NOVA's Nature and shapes NOVA Chemicals into a company that values everyone's voices, identities and lifestyles, while providing every individual with a truly equal opportunity."

TINISI COOPER



"Inclusion is a topic I've been passionate about for a long time. Education and

understanding your own biases are so important, because when you know better, you do better."

JACKIE HARBIDGE



"As a person who relies on a wheelchair for mobility, I want to bring

real-life experiences to the Council and help NOVA understand the specific needs of, and the opportunities presented by, persons with any type of limitation."

LOU KRZEMIEN

# Employee and Contractor Safety

Our vision is to achieve Goal ZERO (zero injuries and incidents) by ensuring safety is embedded in all processes and programs. We consistently demonstrate genuine care for employees and contractors through an established safety culture with clear accountabilities and expectations that promote commitment and thoughtful compliance. Occupational Safety is a core value that guides everything that we do.

## Management Approach: How We Manage Employee and Contractor Safety

We are committed to Goal ZERO (zero injuries or incidents) and believe that all work-related illnesses and injuries can be prevented. In addition to our robust safety management system, we foster a culture in which all workers feel empowered and responsible for maintaining the safety of their colleagues. This includes:

### LIFE SAVING RULES

We review past performance to identify trends and mitigate future risks, focusing on our highest-risk opportunities. We reinforce this work through our six Life Saving Rules. The rules serve as concise reminders for situations where failure to comply has the highest risk potential for serious injury, death, or catastrophic events. We provide our employees and contractors with training on these rules and promote awareness about the importance of compliance. We are continuously improving our procedures to support a consistent approach to the Life Saving Rules because consistent adherence is key to achieving Goal ZERO.



### Why is it important to ensure employee and contractor safety?

Our employees and contractors make essential contributions to our company. It is critical that we create an environment that is free of illnesses and injuries, so that everyone stays safe every day.

## WORKING WITH SAFE CONTRACTORS

Our occupational safety programs are designed to protect employees and contractors. Contractors perform a significant amount of our work, and Goal ZERO is only achievable with their active participation. Our Contractor Safety Management Program defines accountabilities and establishes consistent expectations for the management of contract companies and contingent workers at all NOVA Chemicals facilities to achieve our objective of GOAL ZERO. NOVA Chemicals uses a

prequalification process for all contractors, which focuses on contractors' written health and safety programs and environment, health, and safety performance statistics. All contractors review and agree to NOVA Chemicals' expectations and are expected to participate in training and orientation prior to working on site. We also use a 360-degree evaluation process to evaluate contractor performance and identify areas of continuous improvement within our own systems.

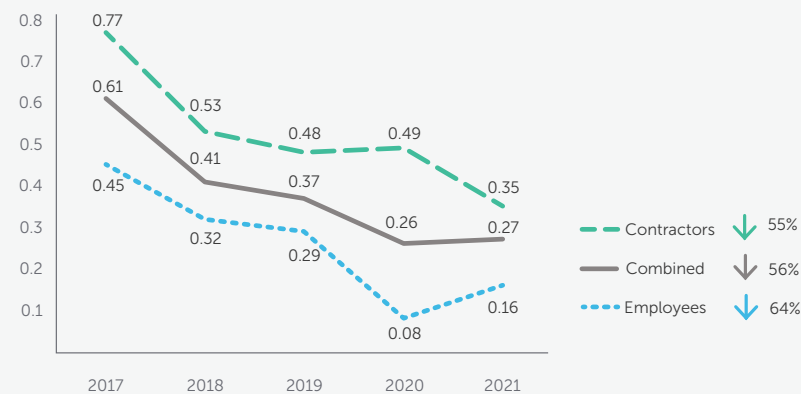
## PROMOTING VISIBLE SAFETY LEADERSHIP

Visible Safety Leadership (VSL) is a standardized approach to guiding leader engagement with project and manufacturing personnel in the field. Our Guide for Visible Safety Leadership, with modules on common safety topics (e.g., Working at Heights), gives leaders the tools they need to have purposeful and meaningful dialogues with field employees, capture observations and learnings, and ultimately enhance safety performance and practices.

## Our Performance

### Recordable Injury Rates

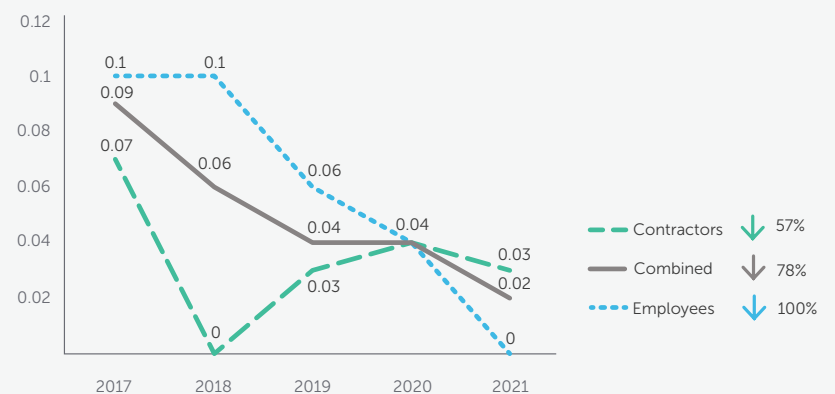
(rate per 200,000 hours worked)



In 2021, our combined recordable injury rate was 0.27. This represents our second year of best-ever performance and a 56 percent reduction in overall TRIR compared to 2017.

### Lost Time Injury Rates

(rate per 200,000 hours worked)



In the last five years, we have been able to reduce our combined lost time injury rates by 78 percent. While the company's TRIR and LTIR rates show significant improvement, we aspire to Goal ZERO and continue to focus on our improvement opportunities.



## ENCOURAGING SAFE BEHAVIORS:

- Safety interactions:** By observing both safe and at-risk behaviors, we can provide reinforcement or coaching in the form of quality, respectful non-disciplinary dialogue that addresses safety. These safety interactions encourage a Responsible Care mindset and play a key role in achieving Goal ZERO. In 2021, our employees recorded more than 57,000 safety interactions in the workplace or while working from home. Our safety team analyzes the content of the recorded safety interactions to gain insights and share lessons learned. The safety Interactions are reviewed on a regular basis to understand trends so that NOVA Chemicals can adjust our programs accordingly.

- Safety awareness:** We conduct regular Toolbox Talks (informal, job-specific safety meetings). We also host an annual Safety Day event at all locations to help employees and service providers learn about safety hazards and incident prevention.
- Hazard recognition:** Spotting and correcting hazards are important components of a safe workplace. To engage employees in identifying workplace hazards, we provide hazard recognition training and learning opportunities. This includes safety tools and processes, such as our Am I Ready philosophy, which challenges employees to consider if they have the right training, competency, and equipment, are responsive to changing conditions, and are in the right mental and physical state to undertake the work.

- Sharing of learnings:** After an incident, we conduct a Significant Incident Review process. This process entails causal analysis and a leadership quality review. Our Responsible Care Risk Alerts and Responsible Care Risk Bulletins are the processes we use to rapidly share information about an incident across the company to help prevent similar incidents. Responsible Care Risk Alerts include a “call to action” that initiates immediate mitigation activities.
- NOVA's Nature Awards:** These annual awards recognize individuals and projects within the organization that exemplify the values, practices, and habits (including safety) that will allow us to achieve our strategic goals.



We made substantial progress towards completion of our new Advanced SCLAIRTECH technology facility (AST2) and Corunna cracker expansion and achieved our second year of best-ever safety performance.

## 2021 Activities

### ESTABLISHED SAFETY AND OPERATIONAL RISK COUNCIL (S&ORC)

NOVA Chemicals established the S&ORC in 2021 to lead, allocate resources for, and track performance of safety and risk initiatives. With members drawn from senior corporate and facility leadership, including the CEO, the S&ORC will demonstrate visible leadership of a strong safety culture, contribute to the Significant Incident Review process, and ensure that safety management systems are effective and fit-for-purpose, risks are identified and assessed, and controls and recovery measures are established.

### ENHANCED CONTRACTOR SAFETY MANAGEMENT STRATEGY

In 2021, a multidisciplinary team of safety, maintenance, procurement, and operations subject matter experts and leadership completed alignment of our contractor safety management program with the RC14001® system, focusing on establishing risk management processes, clarifying roles and responsibilities, and standardizing performance management (learn more about RC14001 requirements on [page 35](#)).

### REVISED SAFETY ALERT PROCESSES

To drive performance improvement and risk awareness, we revised the process we use to alert our teams about safety-related risks and events. In the new process, Responsible Care Risk Alerts and Responsible Care Risk Bulletins are issued based on severity or potential severity and use a corporately developed template that improves the quality and consistency of the reports. Operational Leadership Team members are then required to discuss the alert or bulletin with their teams, take action to mitigate risks identified, and document these actions within a tracking log to share learnings.



### INCREASED SAFETY PERFORMANCE VISIBILITY AT FACILITY LEVEL

In 2021, we launched a data visualization dashboard that allows employees to view corporate and facility-based safety performance data. Employees can explore dozens of variables in near real time, from near hits to causes of incidents. The dashboard helps employees and leaders identify gaps, support mutual learning, and connect individual decisions to facility and company performance outcomes.

### EXPANDED ASSURANCE PROGRAM

As part of our ongoing alignment with the RC14001 system, we modified our assurance program to a risk-based approach including defining Major Unwanted Events (MUE) and identifying critical controls. These changes will facilitate the identification, prioritization, and mitigation of safety risk gaps; make our internal assurance function a catalyst and partner in achieving Goal ZERO; provide independent confirmation of program efficacy to senior leadership and the Board; and demonstrate due diligence to external stakeholders.

### INTRODUCED ANONYMOUS NEAR-HIT REPORTING

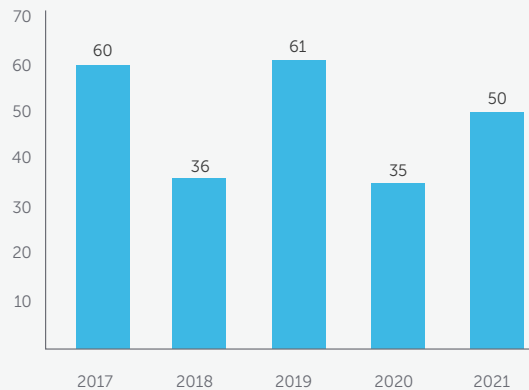
In January 2021, we introduced anonymous near-hit reporting for our ongoing construction projects in Corunna (cracker expansion) and our second Advanced SCLAIRTECH technology facility (AST2) to proactively identify and resolve hazards before an incident occurs. The anonymous system allows frontline workers to share their concerns with our leadership in an unfiltered medium. Anonymous near-hit submission boxes and reporting cards were installed across the sites and are checked and reviewed by Responsible Care teams. Each week we integrate what we are learning from near hit submissions into our Responsible Care activities in the field and communications including a daily work report that describes any actions taken and weekly updates in our construction newsletter. Over a 12-month period, approximately 90 percent of the near hits we received were anonymous.



## Our Performance

### Vehicle Incidents

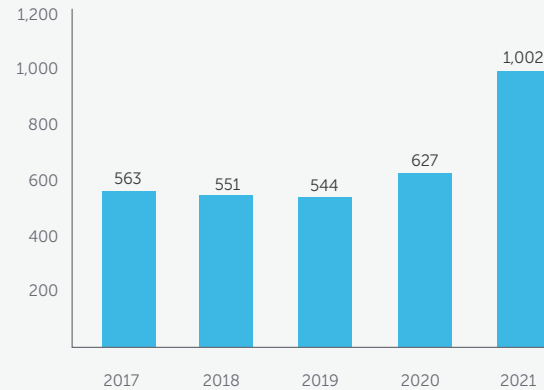
(number of incidents)



We have reduced **driving-related incidents** (do not include rail or powered mobile equipment) by 17 percent since 2017. Employees must complete virtual safe driving training, with refresher training available.

### Near Hits

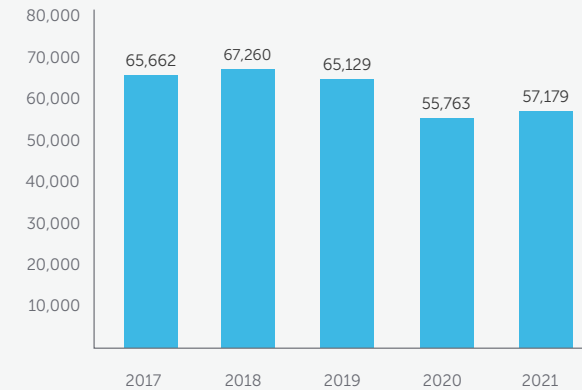
(number of reported near hits)



A **near hit** is an unplanned event that did not result in injury, illness, damage, loss, or violation of a procedure, process, regulation, or law, but had the potential to do so. We encourage near hit reporting because it is a proactive leading indicator that enables us to identify and address a hazardous situation before an incident occurs. The increase in near hits follows awareness outreach to carriers and site coordinators and team leaders that has led to renewed recognition for reporting transportation incidents and near hits.

### Safety Interactions

(number of safety interactions)



**Safety interactions** are peer interactions about safe or at-risk behaviors. We encourage employees to speak up when they see positive or at-risk behaviors, as part of a Responsible Care mindset. Although the reduction in total number of employees as of 2020 resulted in a corresponding reduction in the total number of Safety Interactions, participation rates met or exceeded our internal targets despite COVID limiting opportunities for on-site observations and in-person interactions.



# Process Safety

We are committed to implementing process safety measures, including prevention and risk-reduction efforts, to help ensure the safety of people, the environment, and property.

## Management Approach: How We Manage Process Safety

To prevent process safety incidents that could harm people, property, or the environment, our management process includes:

### "LAYERS OF PROTECTION" MANAGEMENT

"Layers of protection" refers to the engineering, operating, and maintenance management model we follow to prevent process safety incidents through multiple lines of defense. We start by designing facilities with inherent safety features and protective technologies. We also apply safety management systems and processes (e.g., hazard analysis, asset integrity management, change management) while operating those facilities. The layers of protection extend to include employee safety awareness and our organizational safety culture.

### PROCESS HAZARD ASSESSMENT

We actively monitor more than 60,000 potential hazard scenarios as part of our ongoing five-year Process Hazard and Risk Assessment Program. We assess the risk, frequency, and severity of these scenarios by using industry-leading methodologies consistent with those published by the [Center for Chemical Process Safety](#).

### THOUGHTFUL COMPLIANCE

Thoughtful Compliance refers to a state of mind in which employees and contractors maintain a sense of vulnerability and question when things are not as they should be. To consistently and successfully manage the risks associated with our operations, we need to be thoughtful about the hazards that we manage and compliant with the programs and practices designed to keep us safe. By recognizing when things are not as they should be, we can seek help and correct abnormal situations before incidents can occur. To promote a thoughtful compliance mindset, we engage in a number of activities focused on improving our safety culture. See Encouraging Safe Behaviors on [page 36](#) for details.



## Why is it important for us to manage process safety?

As a petrochemical company, we manage many materials, some hazardous. It is imperative that we focus on process safety to prevent incidents (e.g., explosions, fires, toxic releases) resulting from the accidental release of these materials.

## 2021 Activities

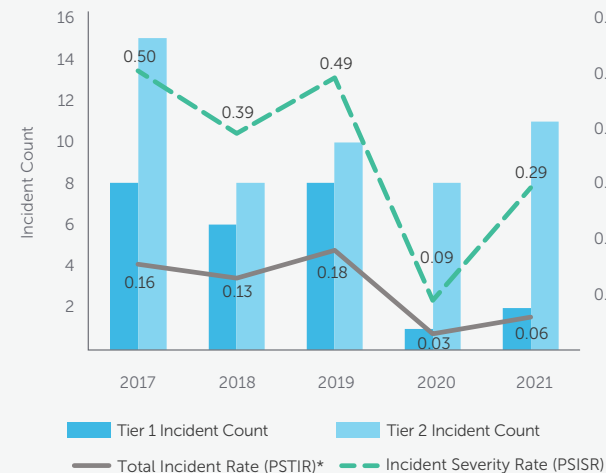
### CONDUCTED A PROCESS SAFETY CULTURE SURVEY

NOVA Chemicals conducts a safety culture survey every three years to understand our current safety culture and look for opportunities to improve performance. In 2021, we conducted our fourth Process Safety Culture Survey targeting employees in production and research facilities where process safety hazards are most likely to be found and managed. Our analysis of the 31-question survey and follow-up workshop results will inform recommendations to senior leadership about further improvements to our process safety culture. Initial findings include:

- **99.3 percent** of our employees “Agreed” or “Absolutely Agreed” with the statement “I am comfortable seeking help from others if I am unsure about a process safety risk or action I am taking.”
- **94.5 percent** of our employees “Agreed” or “Absolutely Agreed” with the statement “I am comfortable to take action (such as stopping the job or shutting down the process) to address imminent process safety issues or concerns.”
- This high response level is a positive reflection of our safety culture at NOVA and is also supportive of our ongoing actions to continuously improve our overall safety culture maturity.

## Our Performance

### Process Safety Incidents

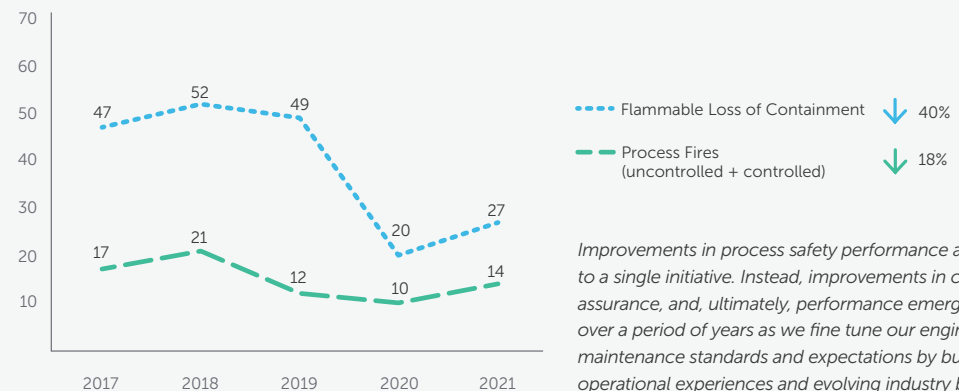


\*PSTIR includes Tier 1 incidents in alignment with SASB

To manage process safety performance, we use layers of protection management, risk assessments, and a culture of thoughtful compliance. We had two Tier 1 incidents in 2021. One incident was related to overflow of wash oil and water from a temporary tank during a turnaround. We contained the vast majority of the spilled volume, recovered the rest, and are investigating improvements to the design and installation of temporary tanks. The second incident was an ethane leak from an infrequently used section of a piping system. We immediately eliminated that section and have begun an inventory of irregularly used equipment to prevent similar events. Note: API 754 (industry guidance) provides classification thresholds based on the nature of the material, release size/rate, and resulting consequences. Typically, Tier 1 events resulted in adverse consequences (most often equipment damage) while Tier 2 events had the potential to result in adverse consequences.

### Process Safety Events

(number of events)



Improvements in process safety performance are rarely attributable to a single initiative. Instead, improvements in compliance, assurance, and, ultimately, performance emerge incrementally over a period of years as we fine tune our engineering, operations, maintenance standards and expectations by building on our operational experiences and evolving industry best practices.

# Product Safety

We manage the health, safety, and regulatory impacts of our products at every stage of the product lifecycle — from design and manufacturing, through sales and use, to reuse, recycling, recovery, and disposal. We consistently work to understand product risk, engage our suppliers, communicate with customers, and ensure regulatory compliance.

## OUR TARGET

By 2025, implement a Sustainable Chemistry program that works towards more sustainable products and product solutions with improved safety and environmental profiles.

### What does our target mean?

A Sustainable Chemistry program includes development and implementation of tools to evaluate the sustainability of our products and product solutions, and KPIs to track our progress to improve their safety and environmental profiles. This will help guide our actions from early Research and Development through to procurement of ingredients in our products.

## Management Approach: How We Manage Product Safety

Our product safety program is designed to understand and communicate the safety impacts of our products, address product regulations, and manage risks. This program includes:

### UNDERSTANDING PRODUCT RISK

We test our products to ensure safety and suitability for various customer applications. Potential hazards of our products during their lifecycle are handled through our Product Risk Characterization and Management program, which prioritizes our products by risk and takes action to mitigate unreasonable risk.



## Why is it important for us to manage product safety?

It is our responsibility to help protect public health and the environment and to promote the safe handling and use of our products.



## WORKING WITH SUPPLIERS

We focus on selecting best-in-class suppliers and audit supplied products to ensure they meet our rigorous technical property criteria. We engage external partners through our Responsible Care Outreach program to promote Responsible Care values such as safety and environmental stewardship. Suppliers of ingredients that remain in our products as sold are required to provide us with detailed regulatory and hazard information on their components so we can understand and manage potential impacts.

## PROVIDING SAFETY INFORMATION TO CUSTOMERS AND THE PUBLIC

We provide customers and the public with safety information in the following ways:

- We create, maintain, and distribute Safety Data Sheets ([SDS](#)) and labels to communicate the hazards of NOVA Chemicals' commercial and non-commercial products, including safe handling methods by employees and customers
- We create risk profiles and background information documents (product backgrounders) for our customers to help promote safe handling and Responsible Care values
- We provide product information on our website and work actively with trade associations (e.g., as a member of CIAC and ACC) to conduct public education and outreach
- We have a robust process to review and manage any allegations that our products or processes may adversely affect people or the environment

## MAINTAINING REGULATORY COMPLIANCE

We pursue continual compliance with regulations for product manufacture, sale, and use. NOVA Chemicals maintains subscriptions to comprehensive regulatory databases and participates in trade associations that provide insights into industry best practices and upcoming regulatory developments. When required, we employ expert consultants to assist us in monitoring the expanding realm of global chemical and product regulations. We also employ tracking systems to prevent the inadvertent sale of non-compliant products.

## 2021 Activities

### CONTINUED EXPANDING SDS AUTOMATIC DISTRIBUTION

To ensure timely access to the most accurate product safety information, we further expanded automatic distribution of SDSs to include 95 percent of countries in which our customers operate. These customers now automatically receive an SDS when they purchase a product for the first time or when there has been a relevant change to a product they have already purchased. When required by law, an SDS is sent to customers at other times or frequency levels.

### COMMITTED TO DEVELOP A SUSTAINABLE CHEMISTRY PROGRAM

In 2021, we began laying the foundation for a new Sustainable Chemistry Program aimed at developing more sustainable products and product solutions with improved safety and environmental profiles. We will share our progress in subsequent reports.



## CHEMICALS OF CONCERN

We work in an evolving field and want to ensure we make informed, up-to-date decisions about product safety and use, based on science and evidence.

We closely monitor various information sources and follow product reviews by regulatory agencies, including toxicology and environmental impact studies, chemical hazard classification reviews, substances of very high concern bulletins, and government chemical risk assessment reports that are applicable to our operations and products.

We work to better understand the potential impacts and phase out chemicals of concern. For example, we are working proactively to replace an additive used in select polyethylene products to support broader societal interest in replacing compounds listed among chemicals of concern.

In addition, we continue to participate in the consortium that is working with the U.S. Environmental Protection Agency on its risk evaluation of 1,3-butadiene.

# Transportation Safety

We focus on safely transporting raw materials and feedstocks, intermediate chemicals, and finished products to their destinations and avoiding releases of these kinds of products to the environment. We maintain comprehensive planning, screening, assessment, and audit plans to align with industry regulations and best practices.

## OUR TARGET

Sustain our performance of zero non-accident releases (NARs) during rail transport through 2025.

## What does our target mean?

A non-accident release is the unintentional release of a hazardous material, including loading and unloading while in railroad possession that is not caused by derailment, collision, or other rail-related accident. Avoiding this kind of release is important to us because it aligns with our aspirational goal of zero NARs. In 2021, we achieved our eighth year in a row of zero NARs, which we want to maintain. NARs can be prevented with proper unloading and loading procedures as well as railcar maintenance and inspection.



## Why is it important for us to manage transportation safety?

Safe transportation practices help prevent product spills and incidents which could negatively impact the safety of people and/or the integrity of the environment.

## Management Approach: How We Manage Transportation Safety

We use pipelines, rail, trucks, and marine vessels to transport raw materials and feedstocks, intermediate chemicals (e.g., butadiene and propylene), and finished products to customers. Since we depend largely on third parties to transport our products, many of our activities are dedicated to ensuring we work with safe carriers. This work includes:



### ACTIVITIES FOR ALL MODES OF TRANSPORT

**Transportation security:** All our operating facilities have Facility Security Management Programs supported by our Corporate Transportation Security Plan for rail, road, and marine transport. These programs and plans include measures to prevent dangerous goods and our polyethylene products from being stolen or otherwise unlawfully interfered with while being handled, offered for transport, transported, or imported. We are members of the U.S. Customs and Border Protection's CTPAT® program (Customs Trade Partnership Against Terrorism) and the Canadian Border Services Agency's PIP program (Partners in Protection) and meet minimum security criteria for importers for cross-border trade in both countries.

**Incident reporting:** We measure and monitor transportation incidents at or between all our facilities as well as transportation incidents that involve our products at vendor and customer facilities. Through our supplier outreach program, we engage suppliers and carriers to ensure they effectively report incidents and incorporate corrective actions.

**Transportation emergency management:** Several of the inputs and intermediate chemicals we transport are subject to an Emergency Response Assistance Plan (ERAP), a Canadian regulatory requirement for certain dangerous goods. Our ERAP has been approved by Transport Canada, incorporates industry standards and best practices, and is actively maintained to account for any new chemicals we transport. Our NOVA Chemicals Logistics Emergency Response Team (NOVAlert) of technical advisors is supported by emergency response service providers stationed along major transportation corridors where our products and raw materials are transported in Canada. We also participate in TRANSCAER® (Transportation Community Awareness and Emergency Response), a program to ensure communities are informed about products being moved through their area and to communicate measures in place to ensure safe transportation.

**Pellet loss prevention:** We align with the principles of Operation Clean Sweep (OCS), a campaign to prevent plastic pellet loss at facilities and during transportation. We also encourage our customers and transportation partners to commit to OCS pellet stewardship practices to keep plastic pellets out of the environment.

### ACTIVITIES FOR SPECIFIC MODES OF TRANSPORT

#### Screening and onboarding of trucking carriers:

We prefer to work with carriers who are Responsible Care companies; these currently make up 19 percent of our 26 truck carriers. To further ensure safe practices, we screen carriers through self-assessments (e.g., handling, routing, security, other safety aspects) and third-party screening by industry-leading vendors. When onboarding new carriers, we discuss and mutually agree on expectations.

**Evaluation of carriers:** All carriers are assessed, with the exclusion of one-time shipments. Through our Responsible Care Outreach Program, we assign all carriers a level of risk (Low/Medium/High) which determines their review frequency.

**Railcar securing and maintenance:** To prevent non-accident releases, we have strict processes in place to secure our railcars (e.g., RideTight® fluid-sealing management program) and employ a tank car maintenance program that exceeds regulatory requirements. We also provide a railcar inspection training program for all rail tank car and rail hopper car loading and unloading personnel to ensure proper implementation of these processes.

**Pipeline integrity:** We maintain a rigorous pipeline integrity program for the approximately 600 km of pipelines we operate. Our program includes right-of-way inspections, flyovers, in-line inspections, and integrity or verification digs.



## ZERO NARs

Zero non-accident releases during rail transportation in 2021.

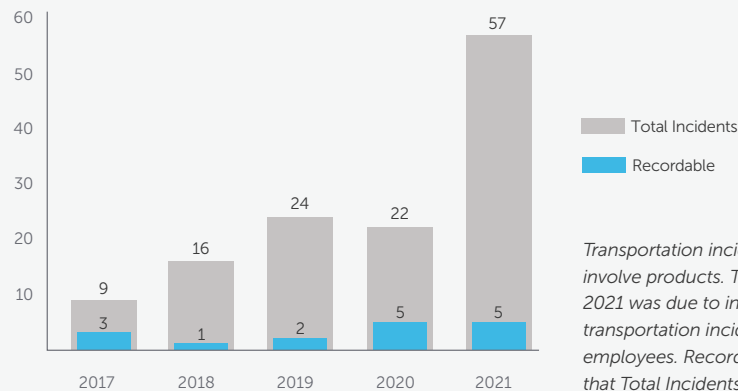
Our 2021 performance marks our 8th consecutive year of zero NARs. See “What does our target mean?” on [page 43](#).



### Our Performance

## Transportation Safety Incidents

(number of incidents)



*Transportation incidents exclude vehicle incidents that do not involve products. The significant increase in total incidents in 2021 was due to increased recognition and reporting of minor transportation incidents and near hits by our carriers and our employees. Recordable incidents remain steady at five. Note that Total Incidents includes near hits.*

### 2021 Activities

#### COMPLETED TRANSPORTATION SECURITY PLAN IMPLEMENTATION

Having implemented the plan at our Canadian locations in 2020, we added an agricultural component to the plan to help prevent cross-border pest transfer.

#### DEVELOPED WORKPLACE SECURITY AWARENESS TRAINING

This new training enhances workers' familiarity with security issues, making them more aware of their roles and responsibilities in relation to security matters. The goal of this training is to raise awareness to mitigate known risks related to terrorism, unlawful interference, or any potential threats and other security concerns (e.g., theft, vandalism, and unwarranted surveillance). In doing so, security becomes a part of NOVA Chemicals' day-to-day activities to help contribute to a safe and secure transportation system. We finalized the training in 2021 and rolled it out to all locations in January 2022. All employees and contingent workers receive this training.

# Talent Management

Employees and leaders who are engaged in work that is meaningful to them, and who have opportunities for personal and professional development, are better able to help us achieve our strategic goals.

## Management Approach: How We Promote and Develop Talent

### EVERYDAY LEARNING

We encourage everyday innovation by supporting an environment of learning. Up to 70 percent of our employee development occurs on the job, 20 percent consists of coaching from a leader and/or networking, and 10 percent is from formal learning (virtual or classroom). All people leaders at NOVA Chemicals are invited to participate in our Applied Leadership Network, a program that facilitates learning between peers at meetings that take place six times per year.

### FORMAL LEADERSHIP DEVELOPMENT

NOVA Chemicals' Leadership Development programs and supporting framework segments leaders into different groups based on leader level and development needs, from emerging leaders to senior people leaders. Our philosophy of development means capabilities are advanced through experience, coaching, and formal training. One of our foundational programs is called CONNECT The Neuroscience of Quality Conversations®. This program focuses on facilitating effective conversations between leaders and employees, a critical element in elevating individual performance and development. Training takes place in virtual sessions led by the NeuroLeadership Institute. Our Emerging Leader program prepares individuals for future leader roles, and our Accelerated Leadership Development Program prepares select candidates for senior leader roles.



## 2021 Activities

### EXTENDED LEADERSHIP DEVELOPMENT TO SHIFT SUPERVISORS

We worked with our vendor to redesign the delivery of our CONNECT The Neuroscience of Quality Conversations program to meet the needs of manufacturing supervisors who work in shifts.

### FOCUSED ON DEVELOPING A PIPELINE FOR LEADERSHIP POSITIONS

In November 2021, we began an Accelerated Leadership Development Program for employees identified as having senior leadership potential. A select group of employees are enrolled in this five-year program that combines classroom learning and application to develop a talent pipeline for senior leadership positions.

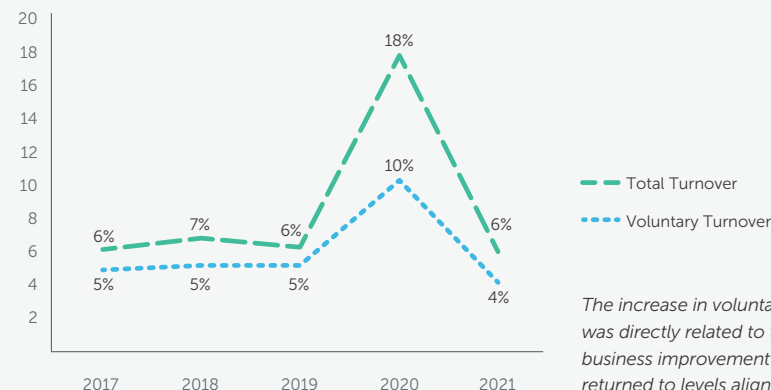
### SETTING THE FOUNDATION FOR NEW WAYS OF LEARNING

In 2021, we established a Learning and Development Center of Excellence, with a focus on supporting the ongoing learning needs of employees and designing learning experiences that support NOVA Chemicals' collective goals. The team developed standards for Value-Based Learning (VBL), Learning Management System, and Content Management; created a Learning and Development SharePoint® site that provides company-wide access to learning resources and tools; advanced the utilization of NOVA Chemicals' Learning Management System (LMS); and identified VBL Change Agents to apply, share learnings, and embed VBL approaches within their business units.

## Our Performance

### Turnover Rate

(percent of employees)



The increase in voluntary and involuntary turnover in 2020 was directly related to the sale of our EPS business and other business improvement processes. In 2021, our turnover rate returned to levels aligned with historical performance.



# Employee Health and Well-Being

Health and wellness are integral parts of our culture at NOVA Chemicals. We believe that a healthy workforce is a safer and more productive workforce.

## Management Approach: How We Promote Health and Well-Being

### OCCUPATIONAL HEALTH AND PROGRAMS

We have standardized occupational health and programs at all NOVA Chemicals facilities in compliance with applicable regulations and company standards. Occupational health serves as an integrated function that supports safe, reliable, and competitive operations by maintaining a high-performance culture through the enablement of comprehensive occupational health practices that minimize risks to workers and to the business. We promote employee health and well-being with core programs that ensure worker protection in areas of mental, biological/chemical, and physical health such as ergonomics, fitness to work, travel health, and hearing conservation programs.

### INDUSTRIAL HYGIENE

The Industrial Hygiene program is integrated with the Occupational Safety, Occupational Health, and Contractor Safety Leadership programs to recognize, manage, and control industrial hygiene and safety risks and reduce incidents, injury, illnesses, and occupational disease to help provide a safe and healthy work environment. The Industrial Hygiene program strategic goal is to protect workers from exposure to chemical, physical, and biological hazards by use of risk management systems and tools which will prevent occupational illness/disease and injury, enabling our drive to Goal ZERO.

### EMPLOYEE WELL-BEING PROGRAM

NOVA Chemicals' Total Well-Being program supports employee physical, emotional, financial, social, and environmental well-being. Resources available through this program include an employee family assistance



program, influenza and COVID-19 vaccination clinics at our manufacturing sites, and educational information and videos from trusted partners. The well-being program also includes a digital platform that promotes well-being by allowing employees to set personal goals and track progress. Employees who participate in the digital platform are eligible to receive incentives.

## 2021 Activities

### ESTABLISHED A BASELINE FOR EMPLOYEE HEALTH AND WELL-BEING

We standardized data collection and measurement of key variables related to employee health and well-being (e.g., services accessed, absences) to create a baseline against which we will determine need and measure the impact of future initiatives.

# COVID-19 Update

We continue to take action to protect the health and safety of our employees, fulfill our role in the plastics value chain, and support the needs of our communities.

Our multifunctional Pandemic Advisory Team (PAT) continued to guide ongoing activities to protect the health and safety of all employees and contractors working at our facilities and living in our communities. The PAT worked closely with our facilities to adjust measures to reflect evolving public health and government recommendations in the jurisdictions in which we operate. We continue to monitor emerging trends and issues and adapt our guidance and practices as needed to support safe, reliable, and competitive operations.

## PROTECTING CRITICAL WORKERS

Our manufacturing operations were designated as an essential industry during the pandemic. We continued production through 2020 and 2021, maintaining or adjusting our COVID-19 safety protocols as required. These included engineering and administrative controls such as physical barriers, visual markers on the floor to support distancing, task-appropriate PPE, daily Toolbox Talks, staggered lunch breaks, and disinfecting of high-touch areas. We also adjusted construction work on our Ontario growth projects, implementing rigorous health screening and protocols including rapid testing which allowed ongoing construction activities to proceed in a safe manner.

## SUPPORTING ALL EMPLOYEES

In 2021, we continued to provide resources to support our employees' physical and mental well-being during COVID-19. This included resources in our Total Well-Being program (e.g., sleep guides, stress assessments) and a COVID-19 microsite on our company intranet where employees and contractors could access information on the latest pandemic updates, frequently asked questions, and additional resources.

## MAINTAINING A RESILIENT SUPPLY CHAIN

Global supply chains continued to be disrupted in 2021. We were able to meet our customers' needs for safe, reliable products thanks to our strong supplier relationships and ability to source alternative suppliers for key raw materials. Our resourceful teams from logistics, customer experience, procurement, and integrated planning worked tirelessly to develop creative supply chain solutions and find alternative carriers, shippers, and containers to get critical products to our customers.

For details on our COVID-19 related community support, see [page 52](#).



## VIRTUAL PRODUCT TESTING

Customers typically attend physical trials for new designs in person at our innovation centers. In 2021, in response to ongoing pandemic restrictions, we installed cameras to enable customers to virtually participate in product trials, helping our customers and value-chain collaborators to continue designing truly circular structures that meet their applications' sustainability and performance requirements.



# Community Relations and Investment

Our goal is to be a sought-after employer and neighbor. To do this, we collaborate with our communities and invest in projects that address their needs and concerns. We also aim to foster long-term positive relationships with Indigenous communities and regularly engage with communities neighboring our sites.

## Management Approach: How We Manage Community Relations and Investment

### BEING ACCOUNTABLE

We adhere to CIAC's Responsible Care [Accountability Code](#) which outlines expectations for proactive community awareness and dialogue including engagement with Indigenous communities.

### BUILDING AND SUSTAINING STRONG COMMUNITIES

We are committed to investing in organizations dedicated to improving the quality of life in the communities where we work and live. We support multiple organizations dedicated to removing barriers for our communities' most vulnerable populations. We support initiatives focused on three core areas that back our business strategy: Science and Education, Health and Community Service, and the Arts.







### VOLUNTEERING OUR TIME

We believe in lending a hand through active service. We support community and conservation initiatives through paid volunteer time and on our own as individuals and families. In spite of COVID-19 restrictions, our employees volunteered more than 1,300 hours in 2021.

### BEING A GOOD NEIGHBOR

Our Good Neighbor Program outlines specific commitments and actions related to our construction activities. See them below.

### ENGAGING WITH INDIGENOUS COMMUNITIES

We engage with Indigenous communities with respect for their unique history, culture, and rights. This includes identifying and proactively seeking opportunities for engagement and learning, seeking to develop and maintain working relationships and effective dialogue and consultation, and providing equitable access to employment, including through procurement and the supply chain.

## Our Good Neighbor Commitments:



### COMMUNICATIONS

- Create opportunities for stakeholder feedback
- Continue to consult with directly and potentially impacted stakeholders



### EMPLOYMENT

- Create opportunities to connect the construction workforce with local businesses
- Promote local employment and business development opportunities



### ENVIRONMENT

- Meet our permitting and regulatory requirements
- Participate in tree planting and biodiversity protection initiatives
- Work with our contractors to minimize material waste and oversupply



### TRAFFIC

- Implement a traffic management plan
- Proactively anticipate traffic impacts, particularly during peak times and movements of heavy equipment
- Promote safe driving behaviors



### NOISE

- Schedule work primarily during daytime hours

## 2021 Activities

### DONATED FUNDS FOR COVID-19 RECOVERY

NOVA Chemicals proactively allocated funds for ongoing COVID-19 recovery needs in 2021. We engaged with community partners throughout the year, focusing on programs that could make the greatest impact. On Nov. 30, in alignment with the GivingTuesday global generosity movement, we donated \$600,000 to a total of 13 different agencies across our core geographies, bringing the total given for pandemic relief to \$1.25 million. These investments supported thousands of individuals and families in a variety of areas, keeping food on the table, ensuring mental health supports were accessible, and building community resiliency and capacity.

### INAUGURAL ORANGE SHIRT DAY

NOVA Chemicals' employees were encouraged to wear orange on Sept. 30 in acknowledgment and support of Canada's National Truth & Reconciliation Day. This day was established by the Canadian federal government to promote awareness and education about the residential school system and the impact it has had on Indigenous Peoples. We hope this is a day for reflection and conversations about what reconciliation with Indigenous communities means for Canada, companies and individuals.



**NATIONAL DAY  
OF TRUTH AND  
RECONCILIATION**

### GIVING THROUGH UNITED WAY®

We raised \$1.7 million through our regional United Way campaigns, including a combination of employee and retiree pledges, virtual fundraising events and NOVA Chemicals' matching dollars.

### CORE INVESTMENTS IN STEM EDUCATION

NOVA Chemicals is a Founding Partner of the Center for STEM Education and Career Development at Carnegie Science Center® in Pittsburgh, where we help nurture the next generation of innovators and leaders. In Canada, our Catalyst-level support (CAD\$500,000) of Let's Talk Science® continues to enhance and grow the suite of STEM-learning resources and activities available free of charge for youth, educators, and caregivers across the country.

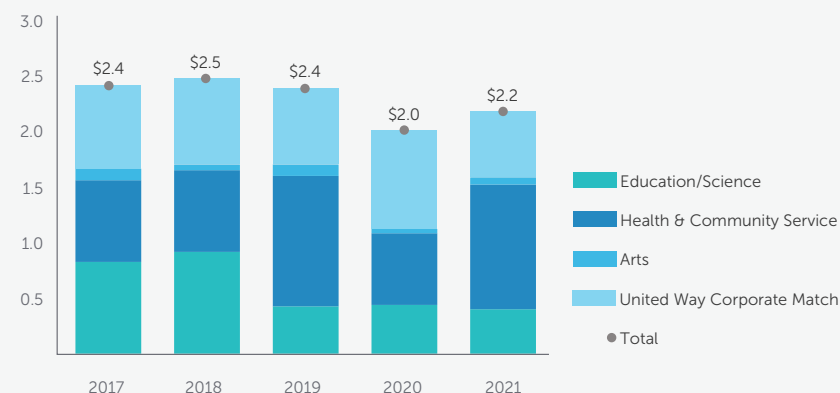
**>\$600,000**

donated in COVID-19-related aid across our operational regions in 2021

## Our Performance

### Community Investment

(\$ million)



We continue to invest in organizations that improve quality of life. Some of our partners are United Way, Carnegie Science Center, and Let's Talk Science.





# GOVERNANCE

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Our unwavering commitment to sustainability and our Responsible Care program is complemented by our long-standing commitment to transparency and accountability. We continually improve our governance and business practices and work to promote a culture of ethical behavior in our company and with our customers and partners.



# Corporate Governance

Corporate governance is an essential element in the ongoing success of our company. Good corporate governance practices help us steward the value of our company and create alignment between the Board of Directors (Board), management, and our shareholder.

## Role of the Board

The role of our Board is to protect the interests of NOVA Chemicals' shareholder, provide guidance to management, monitor the effectiveness of management's policies and decisions, and oversee the execution of our strategy.

## Board Structure

In 2021, our Board of Directors was composed of 11 members, appointed by our shareholder. The Board meets on a regular basis, with seven Board meetings held last year. In 2021, we had two committees, the Audit, Risk & Compliance Committee and the Remuneration Committee. The Audit Committee and the Remuneration Committee also meet on a regular basis, with approximately six meetings for each committee each year. In addition, we have a Pension and Savings Plan Committee, which is a subcommittee of the Audit Committee and the Remuneration Committee, comprised of members of management.

## Board Renewal and Diversity

We do not have term limits or a formal retirement policy for Directors. We require a certain amount of institutional, financial, and industry knowledge on our Board. At the end of 2021, the average tenure of a Director on our Board was 2.6 years. We seek Directors with diverse competencies, skills, and experience.

## Executive Compensation

Our underlying principle is to provide competitive compensation that attracts, retains, and motivates highly capable executives to achieve the company's business plan. NOVA Chemicals' executive compensation is heavily weighted towards incentive plans with 76 percent of our CEO and an average of 64 percent for other executive officer compensation considered "at risk" and dependent on performance against targets.



## BOARD AND GOVERNANCE INFORMATION

### Board composition and independence

Size of Board	11
Independent Directors	2
Separate Chair and CEO	Yes
Independent Chair*	No
Board Meetings Held in 2021	7
Average Meeting Attendance	94%

### Board renewal

Mandatory Retirement Age	No
Average Director Tenure	2.6 years

### Ethics

Code of Conduct for Directors, Officers, and Employees	Yes
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All data as of Dec. 31, 2021.

\* An independent Chair does not apply in a private ownership setting.

## Why is corporate governance important?

Sound corporate governance is critical to mitigating risks, achieving strong performance, and maintaining accountability to stakeholders.



# Governance for ESG

Our Board of Directors provides oversight and our Executive Committee leads our ESG and Responsible Care program efforts, which are embedded throughout all layers of our organization. We continually improve our structures and systems to enable progress in these areas and ensure efficient use of resources.

## Oversight

Although the Board provides the highest level of oversight for ESG matters, our Executive Committee has the highest level of responsibility for our ESG performance and executing strategy. Our Executive Committee represents the highest level of management of our organization and has seven members including our President and Chief Executive Officer (CEO), Chief Financial Officer (CFO), and five Senior Vice Presidents. The role of the Executive

Committee is to provide direction for NOVA Chemicals' ESG governance, management, performance, and target setting. The Executive Committee works to ensure systems, people, and processes are in place to achieve NOVA Chemicals' ESG strategy, optimize performance in Responsible Care objectives, and ensure compliance with all applicable laws and regulations.

Read about governance specifically for climate-related risks on [page 67](#).



## Why is it important for us to have a solid governance structure for ESG matters?

To meet our commitments and be successful in the long term, we need to embed ESG across the organization and provide adequate levels of oversight for ESG-related risks and opportunities.

## ESG Integration

### ESG FACTORS INFORMING CAPITAL INVESTMENT

In 2021, we revised our project-screening tool to include ESG factors. The scoring system used in our capital process now includes environmental and sustainability criteria. This helps identify projects with ESG and sustainability value and escalate them for further review. It also increases visibility of the intangible or delayed value of some sustainability initiatives.

### LINKING ESG TO COMPENSATION

We revised our variable pay program in 2021 to include ESG objectives. In addition to financial and Responsible Care objectives, our Long-Term Incentive Plan includes objectives to support the Circular Economy, Climate Care, and Inclusion and Diversity areas. The Short-Term Incentive and Technical Variable Pay plans continue to emphasize social aspects related to occupational and process safety performance.

## Principles that Guide Our Sustainability Activities

Our [Sustainability and Responsible Care Policy](#) directs our sustainability activities at the highest level. We aim to meet or exceed compliance obligations and commitments, improve our performance, and create long-term value by:

- Providing resources to meet Responsible Care principles and ethics
- Prioritizing work using a risk-based approach (e.g., including climate risk and plastic risk in our Enterprise Risk Management System)
- Setting and achieving goals and objectives
- Implementing science-based solutions and best practices
- Adopting continual improvement methods
- Aligning our interests with those of interested parties



### ECOVADIS SILVER RATING

In 2021, NOVA Chemicals was awarded a Silver rating by EcoVadis. This places us in the top 15 percent of companies assessed by EcoVadis in our industry category and reflects the strength of our management systems as well as the significant effort and dedication of our teams. EcoVadis assesses companies using a sustainability scorecard that includes 21 indicators in four themes: ethics, environment, labor and human rights, and sustainable procurement.







## Policies and Responsibilities for the Management of Our Material ESG Topics

ESG TOPIC	WHO IS RESPONSIBLE	MANAGEMENT SYSTEM AND/OR POLICIES
<b>Plastics Circular Economy</b>	<ul style="list-style-type: none"> <li>Our Market-Focused Teams are composed of marketing, product development, sales, and technical services specialists. These teams collaborate with Operations to bring new products to market</li> <li>Our Sales and Marketing Leadership Team has accountability for plastics circular economy growth, including rPE resin sales</li> </ul>	<ul style="list-style-type: none"> <li>We follow a stage-gate approach to product development, with several built-in checkpoints to ensure we develop products that meet market needs</li> <li>Responsible Care Standard 400 Research and Development — Products and Processes</li> <li>Responsible Care Standard 400A — Product and Process Development</li> </ul>
<b>GHG Emissions</b>	<ul style="list-style-type: none"> <li>Our Climate Solutions Team is responsible for developing a decarbonization plan including the identification of short-term and long-term initiatives and technologies for GHG emissions reduction</li> <li>The accountability for implementation of our GHG reduction plan is with our Executive Committee, with responsibility across many functions including the Operations Leadership Team, Finance Team, Sustainability Team, and Supply Chain and Procurement Team</li> <li>Our Sustainability function is responsible for the environment and GHG strategies and reporting on corporate ESG performance</li> </ul>	<ul style="list-style-type: none"> <li>Our Sustainability and Responsible Care Policy guides our practices and aspirations, including our management and advocacy approach to key risks and opportunities</li> <li>All our facilities have management systems to govern all facets of Responsible Care. These systems align with the requirements of the American Chemistry Council or the Chemistry Industry Association of Canada</li> <li>We are transitioning to the RC14001 management system, a standard that combines elements of Responsible Care and ISO® 14001. In 2020, all U.S. sites achieved RC14001 certification. Canadian sites will be RC14001 certification-ready by 2023</li> </ul>
<b>Employee/ Contractor Safety</b> <b>Process Safety</b> <b>Other Environmental Topics (Air Emissions, Waste, Water)</b> <b>Health and Wellness</b> <b>Product Safety</b> <b>Transportation Safety</b>	<ul style="list-style-type: none"> <li>Our Safety and Operational Risk Council is made up of senior leaders (CEO, SVPs, facility VPs, and Directors) and is responsible for demonstrating Responsible Care leadership, identifying risks and performance trends, allocating resources for safety and risk initiatives, and improving organizational performance towards Goal ZERO</li> <li>Eight Responsible Care Strategy Teams are accountable for developing strategies to improve our Responsible Care performance</li> <li>The Responsible Care Strategy Teams are integrated across locations and functions</li> <li>The Product Safety Team is responsible for understanding and communicating the health, safety, environmental, regulatory, and security impacts of our products throughout their lifecycle, and reports to the Product Safety Strategy Team on a quarterly basis</li> <li>The Logistics and Procurement Team is responsible for transportation safety, including tracking and managing transportation incidents, near hits, and non-accident releases. Metrics are reported monthly to the Logistics Leadership Team. The Supply Chain Risk Exposure Evaluation Network (SCREEN), a work group within Logistics, evaluates transportation risks and reports to the Director, Logistics and Customer Service</li> </ul>	<ul style="list-style-type: none"> <li>Eight Responsible Care Strategy Teams: <ul style="list-style-type: none"> <li>Environment</li> <li>Occupational Health</li> <li>Industrial Hygiene</li> <li>Occupational Safety</li> <li>Contractor Safety</li> <li>Emergency Services &amp; Security</li> <li>Process Safety</li> <li>Product Safety</li> </ul> </li> </ul>



ESG TOPIC	WHO IS RESPONSIBLE	MANAGEMENT SYSTEM AND/OR POLICIES
<b>Inclusion and Diversity</b>  <b>Talent Management</b>	<ul style="list-style-type: none"> <li>Our Human Resources Team is responsible for tracking performance and developing programs in pursuit of our inclusion and diversity goals and to develop our leaders and employees</li> </ul>	<ul style="list-style-type: none"> <li>Our Inclusion and Diversity Strategy will guide our actions towards a more inclusive and diverse workplace</li> <li>Our formal leadership development is largely delivered through a program called CONNECT The Neuroscience of Quality Conversations</li> </ul>
<b>Community and Indigenous Relations</b>	<ul style="list-style-type: none"> <li>Our Regional Public Affairs Team is responsible for developing programs to engage with and support our communities including fostering long-term positive relationships with Indigenous stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability and Responsible Care Policy</li> <li>CIAC Accountability Code. ACC for Geismar operations</li> <li>Community Investment Principles</li> </ul>
<b>Ethics and Compliance</b>	<ul style="list-style-type: none"> <li>The Ethics and Compliance Team is responsible for developing, implementing, directing, reviewing, and revising the Ethics and Compliance program to be consistent with our risk profile and business strategies and to meet best practices</li> <li>The team reports metrics quarterly to the Executive Committee and the Audit, Risk &amp; Compliance Committee of the Board and annually to the Board of Directors</li> </ul>	<ul style="list-style-type: none"> <li>Code of Conduct</li> <li>Anti-Trust Compliance Policy</li> <li>Anti-Bribery and Corruption Policy</li> <li>Conflict of Interest Policy</li> <li>Digital incident management system with built-in reporting metrics (e.g., calls to the ethics hotline, cases) and automatic notifications and reminders</li> </ul>
<b>Responsible Supply Chain</b>	<ul style="list-style-type: none"> <li>The Logistics and Procurement Team, working within the Responsible Care Outreach Program, is responsible for the business relationships with its supply chain partners, including evaluating the operational risks of the transportation functions</li> </ul>	<ul style="list-style-type: none"> <li>Responsible Care Outreach Program</li> <li>Supplier Code of Conduct</li> <li>Business Partner Due Diligence Program</li> <li>Sustainable Procurement Policy</li> </ul>
<b>Public Policy</b>	<ul style="list-style-type: none"> <li>Our Government Relations and Industry Relations Team is responsible for engaging with government officials and regulators</li> </ul>	<ul style="list-style-type: none"> <li>We follow Canadian, Alberta, and Ontario lobbying Acts in Canada and rely on industry and trade associations and lobbying firms to advocate on our behalf in the U.S.</li> </ul>
<b>Cybersecurity</b>	<ul style="list-style-type: none"> <li>Our IT organization is responsible for procuring systems and developing processes that protect our assets, data, and information</li> </ul>	<ul style="list-style-type: none"> <li>NIST® cybersecurity framework</li> <li>IT User Policy</li> <li>Code of Conduct</li> </ul>

## How We Improve

### STANDARDIZATION

Standardization of processes is a key element of continuous improvement. We continue to standardize company-wide policies and procedures, prioritizing high-risk activities that incur frequent sources of injury or have potential for severe consequences. To date, we have standardized processes for crane and hoisting, rigging, safe driving, high-potential incidents, life-saving rules, workplace chemical labeling, operational and strategic risk, safety interactions, personal protective equipment, and risk communications.

### MAKING PERFORMANCE VISIBLE

Employees and leaders can view facility- and corporate-level performance data using our Business Intelligence (BI) Dashboard. Dozens of variables can be viewed and explored including safety and production metrics. The BI Dashboard is part of NOVA Chemicals' broader digitalization effort to connect employees and leaders to data that can identify gaps, support mutual learning, and reflect continuous improvement.

### CONTINUOUS IMPROVEMENT (CI)

CI refers to our mindset and framework for reducing variability, cost, and waste; engaging and developing employees; making performance visible; and driving problem-solving to generate business results through the systematic application of the framework components.

### OTHER IMPROVEMENT ACTIVITIES

- Our Business Improvement Program is a comprehensive strategic management system for improving our business on an ongoing basis
- We periodically review our policies and programs to ensure we comply with changing regulations, address societal expectations, and respond to sustainability risks and opportunities
- We assess our risks and ensure they are eliminated or controlled to appropriate levels
- Our operations undergo internal and external audits according to a schedule or based on the results of our risk assessments
- We measure our performance, benchmark against our peers, and assess our improvement over time
- We investigate ethical, environmental, health, safety, and security incidents and apply appropriate mitigative actions and analyze trends



### SPOTLIGHT ON RESPONSIBLE CARE

All our facilities have management systems to govern all facets of Responsible Care standards. These systems align with the requirements of the American Chemistry Council or the Chemistry Industry Association of Canada.

We are transitioning all of our facilities to a new RC14001 management system, a standard that combines elements of Responsible Care and ISO 14001. Benefits of the RC14001 unified management system include enhanced transparency and accountability, improved clarity on value chain influence and responsibility, reduced variation across the organization, and alignment with international standards.

To keep our management systems certified, our facilities must undergo third-party audits every three years.

In 2020, our Geismar site completed its third-party certification audit and is now RC14001 certified.

Our Canadian sites will replace their current management system and will be RC14001 certification-ready by 2023.



**Responsible Care®**  
Our commitment to sustainability.



# Business Ethics and Compliance

We are committed to responsibly conducting our business with honesty and integrity. We have robust systems in place, including key policies relating to employee conduct, responsible behavior, anti-bribery, anti-corruption, and conflicts of interest.

## OUR TARGET

Complete a gap analysis of our current anti-bribery management against ISO 37001 and implement a plan to close the gaps by the end of 2023.

## What does our target mean?

Our anti-bribery management includes all our policies and procedures that support our employees in preventing incidents of bribery or corruption in our dealings with suppliers, customers, and governments. ISO 37001 is a globally recognized standard for those policies and procedures. We will compare our existing practices with the ones suggested by ISO 37001 and develop a plan by the end of 2023. We will start this work in 2022.



## Why is it important for us to manage business ethics?

Robust ethics and compliance management helps ensure integrity in our performance, protects our reputation as a responsible business, and reduces the risk of wrongdoing. It also mitigates any penalties imposed by regulatory and government bodies for violations.

## Management Approach: How We Manage Business Ethics

### SETTING EXPECTATIONS

Our Business Conduct Policy, and the suite of policies it contains, provides employees with clarity and guidance on expected work behaviors. Some of our key policies are:

- **Code of Conduct:** This is designed to assist everyone who works for or represents NOVA Chemicals, including employees and Directors, in making decisions with integrity and honesty. It includes references to our policies and guidelines that promote compliance with laws and regulations. We monitor changes and developments and maintain up-to-date controls.



- **Anti-Trust Compliance Policy:** This policy gives our employees guidance on how to conduct their day-to-day activities without engaging in prohibited conduct or entering into unlawful agreements that limit or restrain trade.
- **Anti-Bribery and Corruption Policy:** This policy is intended to ensure that all of NOVA Chemicals' activities are conducted with the highest level of integrity and ethical standards and fully comply with all applicable laws.
- **Conflict of Interest Policy:** This policy provides guidance on recognizing possible conflict of interest situations and describes the process employees must follow to disclose potential conflicts.

### PROVIDING COMMUNICATIONS AND TRAINING

All employees are required to complete a business ethics and compliance curriculum within their first two months of hire at NOVA Chemicals and annually thereafter. Most of the training consists of online learning modules, with some additional training sessions provided in person. In addition to annual Code of Conduct training/refreshers, we provide in-person presentations related to the following topics: anti-bribery and corruption, anti-trust and competition law, conflicts of interest, gifts and entertainment, interactions with suppliers and customers, and trade compliance. Virtually all (98 percent) permanent active employees completed business conduct training in 2021.

### ASKING QUESTIONS AND REPORTING CONCERNS

We maintain and monitor an EthicsPoint reporting system, which is a 24-hour confidential and anonymous helpline and online reporting system. The EthicsPoint system is for employees, contractors, and members of the public. They can ask questions about ethics matters, request help in decision-making, or report possible violations of the Business Conduct Policy and associated policies. In addition to EthicsPoint reporting, concerns or questions can be raised through employees' leaders, the legal department, or human resources staff. We investigate, document, and follow up on all questions or issues reported through all intake methods. We also identify improvements and organizational learning opportunities to prevent reoccurrence. Retaliation against anyone who, in good faith, reports a suspected, potential, or actual violation is strictly prohibited.

### AUDITING, MONITORING, AND REMEDIATION

Our Ethics and Compliance Team continues to oversee and implement monitoring and remediation plans for ethics and compliance risks and violations.

## 2021 Activities

### INTRODUCED BUSINESS PARTNER DUE DILIGENCE PROGRAM

This program outlines minimum expectations for NOVA Chemicals' business units' due diligence processes to help ensure we only do business with entities that meet our ethical and compliance standards and have a shared commitment to legal compliance. It also lays out the process to assess the risk of a business relationship with a potential partner and monitor that risk throughout the course of a relationship. In 2021, 25 percent of our commercial-facing employees received training on the intent and use of the program; the remaining 75 percent received training in early 2022.

### DEVELOPED SUPPLIER CODE OF CONDUCT

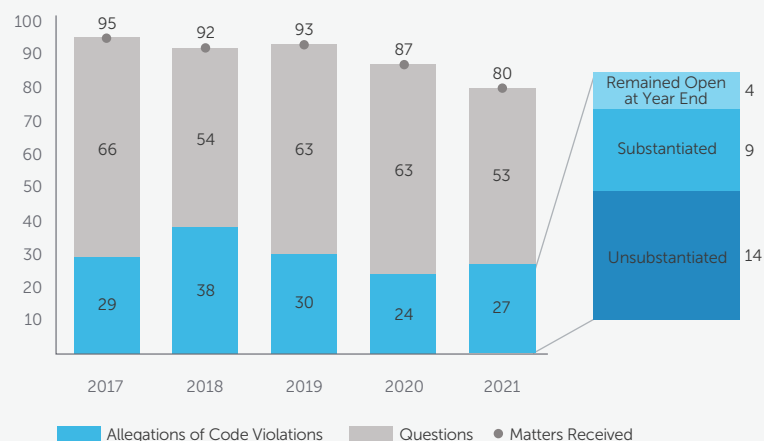
We worked with NOVA Chemicals' Logistics and Procurement Team to develop a Supplier Code of Conduct for new suppliers. See [page 64](#) for details.

### ENHANCED AWARENESS OF ETHICS

We held a Speak Up campaign in the fall and winter of 2021 to remind employees that even if they were working from home or between home and the office, they could use our EthicsPoint system for questions or concerns.

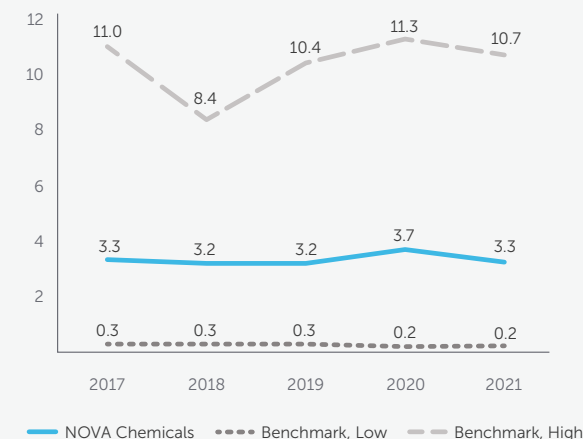
## Our Performance

### Ethical Matters and Allegations



The matters received and addressed reflects the high level of interest shown by employees and leaders in "doing the right thing." For instance, 66 percent of matters received in 2021 were questions. Only four issues remained open at the end of the year, none of which were material. We investigate all matters received. A substantiated allegation might result in employee education, coaching, discipline, or termination, where permitted by local law.

### Ethics-Related Reports per 100 Employees



We compare the number of reports received through our ethics line to the NAVEX Global® benchmark. NAVEX Global has a database of 3,470 organizations that collectively received more than 1.4 million individual calls in 2021. Although there is wide range of call volumes between organizations, NAVEX Global notes that organizations with higher reporting rates (calls per 100 employees) may be experiencing the positive business outcomes discussed in the George Washington University study [Evidence on the Use and Efficacy of Internal Whistleblowing Systems](#), which shows that higher report volumes are associated with fewer and lower amounts of government fines and material lawsuits.



# Responsible Supply Chain

We seek to work with suppliers, customers, agents, and distributors who support our efforts to provide safe, healthy, environmentally friendly, and ethical business practices.

## OUR TARGET

Increase awareness of the Operation Clean Sweep program through engagement with 100 percent of our key customers and transportation partners by 2025.

## What does our target mean?

The Operation Clean Sweep program is an initiative to prevent the loss of plastic pellets to the environment during manufacturing or transportation. Through education and discussion with key customers and transportation partners, we can raise awareness of the importance of Operation Clean Sweep through our supply chain.



## Why is it important for us to have a responsible supply chain?

By managing our value chain according to our Values and Code of Conduct, we can positively influence our entire value chain and promote safe, healthy, and environmentally friendly practices across the globe.

## Management Approach: How We Manage our Responsible Supply Chain

To carry out our manufacturing, construction, and services, we work with approximately 3,000 suppliers that provide feedstocks, raw materials, supplies for maintenance, repair and operations, and transportation services. To promote Responsible Care values across the value chain, we use the following:

- **INTERNAL AND THIRD-PARTY SCREENING:**

We use an internal screening process and a third-party service provider to rate the risks associated with our business partners (i.e., suppliers, customers, distributors). Screening criteria include trade-prohibited countries, denied parties (according to relevant government agencies), and value of the business arrangement. NOVA Chemicals also uses [EcoVadis](#) and [ISNetworld®](#) software to assess and score the sustainability performance and management systems of our key supply partners. The assessments are a key factor in our sourcing and supply chain partner relationships.

- **SUPPLY CHAIN RISK EXPOSURE EVALUATION:**

Our Supply Chain Risk Exposure Evaluation Network (SCREEN) is a cross-functional team that assists and supports our commercial and logistics functions in identifying and managing risks associated with the transportation and storage of products in the supply chain.

- **SECURITY PROGRAMS:** To help ensure the security of our international supply chain, we are a registered partner in the U.S. Customs Trade Partnership Against Terrorism and the Canada Border Services Agency's Partners in Protection program.

- **RESPONSIBLE CARE OUTREACH:** Our Responsible Care Outreach Program encourages the adoption of Responsible Care principles. Through the program, we engage with customers, suppliers, carriers, and other stakeholders to help them understand our commitment to Responsible Care and our expectations for doing business with NOVA Chemicals. To ensure adoption of our Responsible Care principles, we use an automated monitoring service (e.g., following media stories) for key stakeholders.

## 2021 Activities

### INTRODUCED BUSINESS PARTNER DUE DILIGENCE PROGRAM

This program will help ensure that we partner with entities that meet our ethical and compliance standards and have a shared commitment to legal compliance. See [page 62](#) for details.

### DEVELOPED SUPPLIER CODE OF CONDUCT

Our [Supplier Code of Conduct](#) outlines our ethical and compliance expectations of suppliers in the areas of human rights; integrity; transparency; health, safety and the environment; and confidentiality. We intend to roll it out with new suppliers in 2022.

### DEVELOPED A SUSTAINABLE PROCUREMENT POLICY

This policy will lay out guidelines for sustainable procurement practices at NOVA Chemicals. We will roll out this policy in 2022.

### INITIATED SUSTAINABILITY ASSESSMENTS OF SUPPLIERS

In 2021, NOVA Chemicals began using EcoVadis to assess the sustainability practices and performance of key suppliers. The EcoVadis assessment helps identify and monitor risk in the supply chain and provides a process for continuous improvement.



# Cybersecurity

Digital advances offer significant business advantages; however, they can also potentially introduce risks related to digital piracy, cyber ransom, and business interruption or physical damages. We have robust training, auditing, and information protection measures in place to counter these threats.

## How We Manage Cybersecurity Risks

Our holistic approach to digital risk management follows the National Institute of Standards and Technology (NIST) framework, a voluntary framework created by industry and the U.S. government to protect major infrastructure from cybersecurity risks. Our cybersecurity measures incorporate multiple factors to best protect our data, systems, and information. Our efforts include:

### ASSESSING RISK

We comprehensively assess and review new systems and initiatives to ensure cybersecurity standards are followed and implemented. We also undertake cyber risk assessments of third-party vendors to ensure reasonable cyber controls are in place to minimize NOVA Chemicals' risk exposure.

### SECURING THE OPERATIONAL ENVIRONMENT

Our network is segregated into various zones, based on how critical they are to the organization. Each zone has security controls in place to manage access and ensure maximum protection from malware and malicious activities. Given their significance, we isolate

our operational centers from the internet and corporate network activity to limit the risk exposure that could result from a corporate network breach.

### PROTECTING INFORMATION

We regularly update user policies as well as our processes for data loss prevention and data classification. This includes a best-in-class Identity Governance Solution to protect identities and ensure access to sensitive information is provided to only those who need the access.

### TRAINING

To manage digital risks, we include a cybersecurity module in our mandatory Business Conduct Policy annual training. Business and IT employees also engage in tabletop exercises to practice responding to cybersecurity events, and they provide focused training for groups with higher-risk business processes.

### FOSTERING ACCOUNTABILITY

We continue to run regular IT security campaigns including phishing to test employees' awareness of cybersecurity. When required, we ask employees to refresh their training.



## AUDITING

Our cybersecurity systems are audited yearly by a third party and subject to external penetration testing.

## 2021 Activities

As part of our commitment to managing cybersecurity, we established a security operations center in 2021 that monitors and investigates activity that could be malicious and held two tabletop scenario exercises to assess our readiness to respond to cyber-based attacks. We also made additions to our Code of Conduct to reinforce the importance of handling sensitive information and added data forensics as a required skillset for our cybersecurity team. Lastly, we implemented a new IT User Policy to outline acceptable and prohibited use of NOVA Chemicals systems and policy guidelines for the handling of repeat violations during phishing campaigns. We required all employees and contractors to certify that they read and understood the new policy.



# Public Policy

We believe it is essential to have a strong and fair regulatory regime to provide a level playing field, regulatory certainty, and the license to operate. We also have strict ethical standards in place to guide our work while interacting with officials and regulators.

## Management Approach: How We Get Involved in Public Policy

We actively participate in regulatory advocacy through trade associations in jurisdictions where we have manufacturing operations. We are members of the following business and industry associations:

### IN CANADA:

- Chemistry Industry Association of Canada
- Canadian Manufacturers & Exporters
- Business Council of Canada
- Resource Development Council
- Plastics Alliance of Alberta
- Alberta Plastics Recycling Association
- Business Council of Alberta

### IN THE U.S.:

- American Chemistry Council
- Plastics Industry Association
- Flexible Packaging Association
- AMERIPEN
- Association of Plastics Recyclers

We also directly and collaboratively engage with regulators on critical issues to assist them in their efforts to protect human health and the environment. The Canadian federal *Lobbying Act*, the Alberta *Lobbyists Act*, and the Ontario *Lobbyists Registration Act* guide our lobbying activities. An annual review is conducted of our lobbyist registration to ensure compliance. We have an internal lobbying policy and provide training for any executives or employees who are likely to interact with government officials. We track and, as required, make publicly available any lobbying activities that are directly focused on policies, programs, and regulations. In the U.S., we rely on industry and trade associations and select lobbying firms to advocate on our behalf.



# Climate Questions

At NOVA Chemicals, we recognize that changes in climate pose risks to business and society. Here we provide information on our approach to key climate-related questions.

## How does the Board oversee climate-related risks and opportunities?

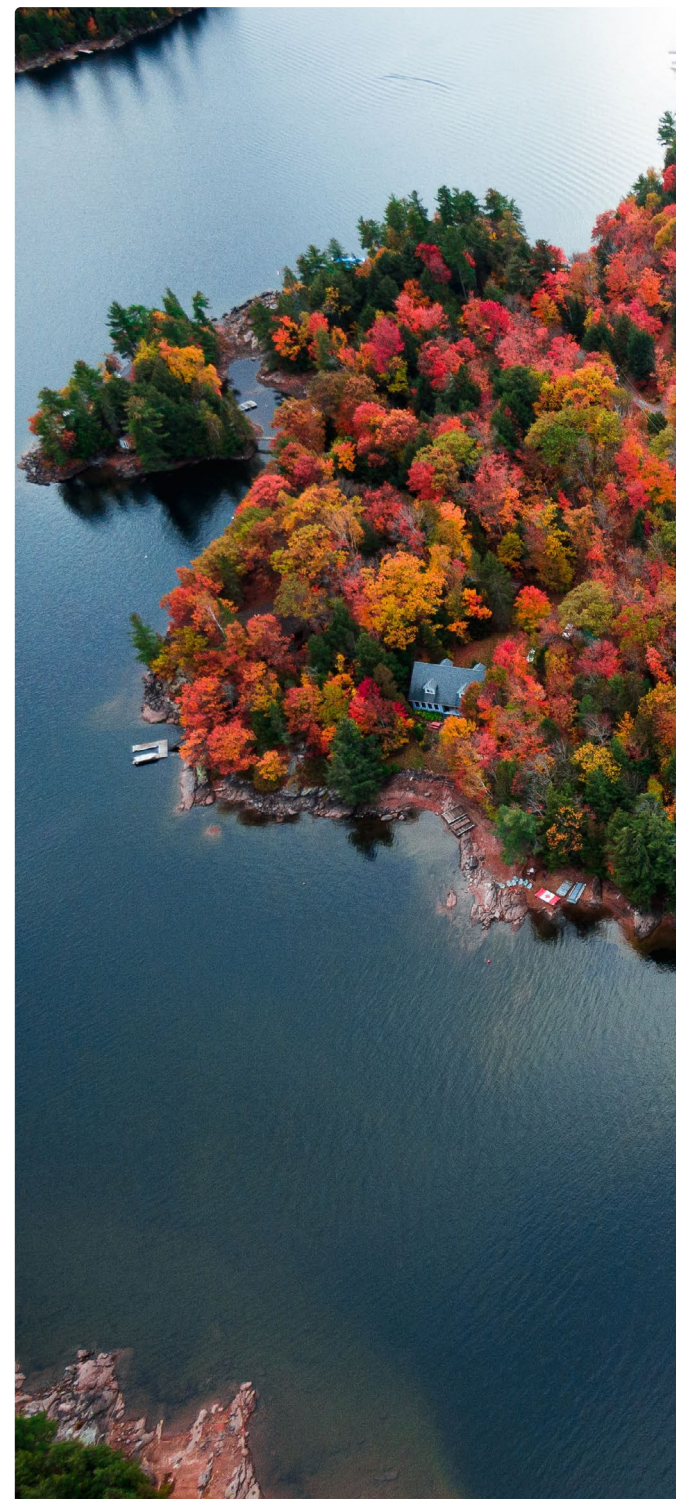
Our Board of Directors provides the highest level of oversight for environmental, social, and governance (ESG) matters. However, the Audit, Risk & Compliance Committee of the Board has the highest level of oversight for all risks impacting the company, which can include climate and transition-related risks.

## What is management's role in assessing and managing climate-related risks?

Although the Board provides the highest level of oversight for ESG matters, our Executive Committee has the highest level of responsibility for our ESG performance and executing strategy. Our Executive Committee has seven members including our President and CEO, CFO, and five senior vice presidents.

The Executive Committee is responsible for:

- Understanding and periodically reviewing the principal risks to our business
- Identifying emerging risks
- Defining organizational risk-tolerance levels
- Monitoring the implementation of risk-mitigation actions, including ensuring that appropriate policies, processes, people, and technology are in place to support safe, compliant, and sustainable business practices
- Reporting quarterly, through the CFO, the key risks and mitigation actions to the Board of Directors or the Audit Committee
- Integrating risks into NOVA Chemicals' general strategy and policies relating to sustainability matters



## What are the organization's processes for identifying and assessing climate-related risks?

At NOVA Chemicals, we have a formal Enterprise Risk Management (ERM) program. Our approach to risk management is guided by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management Framework (2017). The COSO framework defines essential enterprise risk management components and provides clear direction and guidance for enterprise risk management.

Our ERM program includes a process to identify all significant risks to our organization, including climate and transition-related risks. Our approach includes:

**Risk identification:** Our Risk Coach Network includes representatives from all business units at the Vice-President and Director levels, as well as subject matter experts as necessary. The network meets quarterly and is responsible for continually reassessing identified significant risks and identifying emerging risks. NOVA Chemicals' Risk Management group provides a quarterly update to the Executive Committee. The Executive Committee determines whether risks are included in our enterprise risk register. The Executive Committee subsequently informs the Audit Committee of the Board of any new or material changes to risks being managed or any changes in risk assessment. We monitor regulations and legislation to make sure they are reflected in our risk register.

**Risk evaluation:** When evaluating and assessing risks, we consider multiple criteria, including likelihood of occurrence and the scale and nature of a potential impact. For instance, the impact of risks can be social (impacting people), environmental (impacting air, land, water, or biodiversity), financial, or reputational. All risks are assigned an inherent level of risk (risk without mitigation) and a residual level of risk (risk remaining after accounting for current mitigation activities and insurance recoveries). NOVA Chemicals classifies a risk as significant if it has

an inherent risk of \$30 million or more, or a residual likelihood of approximately 25 percent or more, with some latitude and judgment. The assessment of our risks is mapped in our risk matrix (formatted as a heat map) and tracked in our risk register.

## What are the organization's processes for managing climate-related risks?

**Risk management:** Our risk management process follows a "three lines of defense" model. Our first line of defense is the "owner" of the risk, or the business unit most likely to be impacted by a risk, who is responsible for mitigating it. Our second line of defense is our Risk Coach Network. The third line of defense is our internal audit process, which verifies that risks are being managed.

## How are climate-related management processes integrated into overall risk management?

As noted above, our process for identifying climate-related risks is completely integrated with, and not separate from, our Enterprise Risk Management program.

## What climate-related risks and opportunities has the organization identified over the short, medium, and long term, and what is the impact of those risks and opportunities on business strategy and financial planning?

We prepare for risks that could have a material future adverse effect on the operations, financial condition, and reputation of our business. Climate-related risks that fall into these categories have two dimensions: physical and transitional. Physical risks include extreme weather events and changing temperatures that can impact our facilities. Transitional risks include regulatory, legal, and societal changes related to the transition to a lower-carbon economy. The following section describes the short,

medium, and long-term climate-related risks we are currently evaluating.

### PHYSICAL RISKS

All our facilities have emergency preparedness plans that include severe weather events. They also regularly conduct emergency drills. The frequency and severity of extreme weather events appear to be increasing globally, including in our areas of operations. To better understand these risks and their potential impact, we:

- Communicate potential key physical risks to our senior leaders to increase awareness
- Subscribe to a weather service that provides site-specific advance notifications and forecasts for tropical storms and hurricanes for our Geismar, Louisiana, facility
- Include climate-related risks in our enterprise risk register

Since water is essential to our manufacturing processes, we have recently completed an assessment of water risks. For example, the Red Deer River that supplies water for our Joffre site is largely dependent on snowmelt. In the future, shifting weather and climate patterns<sup>1</sup> in Alberta may have impacts on water availability during the summer season.

### TRANSITION RISKS

As governments adjust regulations and their positions to align with more ambitious global decarbonization goals, we continue to monitor regulatory changes. As carbon-pricing regulations continue to evolve, we believe that a transparent price signal is an effective tool in reducing emissions when accompanied by complementary measures that ensure the competitiveness of industry and the sustainability of local economies.

<sup>1</sup> Alberta WaterSMART®. 2016. Climate Vulnerability and Sustainable Water Management in the SSRB Project: Red Deer River Basin Modelling, Final Report. 99 pages. Available online at <http://albertawater.com>.



The following GHG regulations are currently applicable in our areas of operation:

#### Alberta Technology Innovation and Emissions

**Reduction (TIER) regulation:** In 2019, the government of Canada announced that Alberta regulations were deemed equivalent with federal requirements. This means that our Joffre facility can continue to be regulated at a provincial level rather than under the federal Output-Based Pricing System (OBPS). Under TIER, companies can use the facility-specific or high-performance (product-based) benchmark. We use the facility-specific benchmark, which means we have to reduce our facility's emissions intensity based on a baseline year. The Alberta government is planning a review of the TIER regulation in 2022.

#### Ontario Emissions Performance Standards (EPS)

**regulation:** Until recently, Ontario was regulated under the Federal OBPS. In September 2020, the Government of Canada announced that the Ontario EPS regulation had been deemed equivalent with the federal requirements. The federal OBPS remained in effect in Ontario until Jan. 1, 2022, and activities in the province are now regulated by the provincial EPS regulation.

99%

of our emissions are covered under GHG reporting and compliance regulations. The GHG emissions from our Centre for Performance Applications and Centre for Applied Research are reported voluntarily.

85%

of our emissions are covered under GHG-limiting regulations.

**Federal carbon regulation:** In December 2020, the Government of Canada announced that the annual carbon price will increase by \$15 per tonne CO<sub>2</sub>e from 2023 to 2030, reaching an annual cost of \$170 per tonne by 2030. In 2021, the price of carbon in Canada was increased to \$40/tonne CO<sub>2</sub>e. While neither Alberta nor Ontario have made similar announcements committing to the same long-term carbon pricing, the decision by the Supreme Court of Canada determined that the federal *Greenhouse Gas Pollution Pricing Act* is constitutional, meaning that the federal carbon price will inform provincial carbon-pricing options in the future, and all provinces and territories are working with the federal government in early 2022 to confirm their regulations meet the requirements of the federal backstop. The Supreme Court decision reduces the uncertainty for carbon regulation in Canada; however, other factors remain that can influence future carbon regulation in Canada, including elections that can result in changes in policy and regulation.

Other government positions may lead to new regulations in the near term. Positions we are monitoring include:

**Net-zero carbon commitments:** On June 29, 2021, the *Canadian Net-Zero Emissions Accountability Act* became law. The Act legally binds the federal government to a process for achieving net-zero emissions by 2050, including setting rolling five-year emissions-reduction targets and plans to reach them.

**Paris Agreement:** In support of its commitments under the Paris Agreement, the Canadian government continues to implement carbon policy and regulations that apply to our facilities in Canada. In February 2021, the U.S. officially rejoined the Paris Agreement. There is uncertainty about when and how U.S. carbon regulations will be introduced and how they might apply to our Geismar facility. The Environmental Protection Agency has a GHG emissions reporting program for emissions of carbon dioxide, methane, and other GHGs as well as a permitting program for certain large GHG emissions sources. This reporting program applies to our Geismar facility.

#### MANAGING TRANSITION-RELATED RISKS

The vast majority (85 percent) of our GHG emissions are covered under GHG-limiting regulations. We meet our yearly carbon compliance obligations through a combination of three activities: reducing our emissions, purchasing or using purchased third-party offsets or credits, and paying the remaining compliance cost as Fund Credits (Alberta) or an excess emissions charge payment (Ontario). The money contributed to the Fund or paid as an excess emissions charge payment is used to fund both innovative and technology-ready GHG opportunities in the region from which the funds were received.

In 2021, we fully met our compliance obligation in three ways:

- Reducing our emissions through upgrading technology and achieving optimal operating efficiency at some sites
- Using purchased carbon credits
- Contributing to a fund credits program or making an excess emissions charge payment

As part of our strategy to manage our GHG emissions and related compliance, NOVA Chemicals has previously purchased emission credits that are available to mitigate compliance costs and represent real, defensible GHG reductions within the regions where we operate. Regulations in Alberta currently allow the use of emission offsets and credits and the Government of Canada has proposed regulations for the use of offsets and/or credits. As we transition away from the federal program and into an Ontario-based regulation in 2022, we continue to advocate for offsets to be included as part of the program to allow compliance flexibility and support economical GHG reduction opportunities. NOVA Chemicals will continue to investigate opportunities to acquire emission credits in 2022 and beyond to help mitigate compliance costs. Emission credits are not only compliance tools but represent real GHG reductions by third parties covered by the regulation or by approved projects generated outside the regulation.



## TRANSITION-RELATED OPPORTUNITIES

**Demand for lower-carbon products:** We believe plastics will continue to play an essential role in supporting modern life and protecting human health and hygiene. Plastic packaging often delivers many of its benefits with lower environmental impacts than the alternatives. Studies have found that plastic packaging has close to four times lower environmental costs (including lower emissions) than non-plastic packaging.<sup>2</sup> As society continues its transition to a lower-carbon economy, demand for lower-carbon products and services is expected to increase. Our long-term commitment to sustainability can enhance our value proposition to our customers. We are working to improve our performance in this area through:

- Investigating alternative and renewable feedstock sources. As an example, we are evaluating the potential to use non-recyclable and non-compostable municipal waste to produce ethylene in collaboration with Enkema, a project now at the pilot stage. (see [page 15](#) for details).
- Increasing the supply of recycled polyethylene, which can replace virgin resin in some applications.

**Demand for recycled products:** Climate-related trends can also have an impact on the environmental awareness of consumers and enhance the uptake of “reduce, reuse, and recycle” practices. This awareness will continue to increase demand for products that safely incorporate increased post-consumer content. To help meet this demand, we continue seeking ways to develop products that contribute to a plastics circular economy.

**Attention to hydrogen:** To help achieve net-zero emissions, hydrogen has emerged as one of the pathways to a decarbonized economy. We currently produce and sell hydrogen as a co-product at our ethylene facilities. The downstream sale and use of our hydrogen for further value-added manufacturing has two benefits: obtaining a financial benefit by selling a co-product and enabling an environmental benefit since this hydrogen has a lower emissions intensity than hydrogen produced from a steam methane reformer. We will continue to monitor hydrogen developments that might present opportunities to our company, including the development of clean hydrogen technologies produced via electrolyzer from water or by capturing and sequestering the carbon produced in hydrogen production processes using methane as a feedstock.

<sup>2</sup> Read: [Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement](#)

# Other ESG Questions

## Do you have a policy on human rights or modern slavery?

Our commitment to human rights is included in our [Code of Conduct](#) and [Supplier Code of Conduct](#). Specifically, NOVA Chemicals stands by the principle that everyone has the right to be treated with dignity and respect. We recognize and respect human rights, and we expect our partners to do the same. We protect and support the communities where we work by maintaining safe working conditions in which all employees are given an appropriate number of working hours and fair compensation for their work. The use of child and forced labor of any kind is illegal and inhumane. Human trafficking, or modern slavery, is a criminal industry that denies people their freedom and human rights. We are against human trafficking or slavery and all human rights violations. We are hired fairly and with consent, and we hire others fairly and with consent.

## Do you have formal lobbying efforts? How do you provide input to public policy development?

Our disclosures on lobbying and public policy are located on [page 66](#), under the heading Public Policy.

## Do you have significant impacts on biodiversity?

We are committed to proactively and responsibly managing our operational impacts on air, water, land, and biodiversity. Biodiversity is a consideration in our environmental project planning and routine operations. NOVA Chemicals does not have operations in key biodiversity areas or ecologically sensitive areas. However, our Responsible Care standards include requirements to protect natural resources and minimize our impact on regionally sensitive species at each operating site.

## How do you promote sustainable procurement?

Our disclosures on sustainable procurement are located on [page 63](#), under the heading Responsible Supply Chain.







# Performance Table

ENVIRONMENT	UNITS	2017	2018	2019	2020	2021
<b>GHG EMISSIONS (OPERATIONAL CONTROL)<sup>1</sup></b>						
Scope 1 GHG emissions	kilotonnes	3,054	4,094	4,135	3,963	3,820
Scope 2 GHG emissions	kilotonnes	741	900	912	844	837
GHG emissions intensity (Scope 1 & 2)	tonnes CO <sub>2</sub> e/ tonne of product	0.63	0.66	0.66	0.63	0.65
Scope 1 emissions under carbon-limiting regulations <sup>2</sup>	percent	NR	NR	NR	83	85
<b>OTHER AIR EMISSIONS</b>						
NO <sub>x</sub>	tonnes	3,944	5,237	5,105	5,138	4,728
SO <sub>x</sub> <sup>3</sup>	tonnes	518	1,188	861	680	298
VOCs <sup>3</sup>	tonnes	1,216	1,714	1,724	1,460	1,461
Hazardous air pollutants (HAPs) <sup>4</sup>	tonnes				95	55
<b>REGULATORY COMPLIANCE</b>						
Regulatory/permit exceedances <sup>5</sup>	count	10	6	5	7	4
<b>ENERGY USE</b>						
Total energy consumed from natural gas (excluding electricity) <sup>6</sup>	GJ				43,990,000	37,940,000
Total energy used <sup>6</sup>	GJ				113,400,000	113,800,000
Total purchased electricity	MWh				1,643,000	1,648,000
Purchased electricity – non-renewable	MWh				1,643,000	1,648,000
Purchased electricity – renewable	MWh					0
<b>WATER</b>						
Water withdrawal	m <sup>3</sup>	NR	NR	NR	40,850,000	40,150,000
Water withdrawn from regions with High or Extremely High Baseline Water Stress <sup>7</sup>	m <sup>3</sup>	NR	NR	NR	14,920,000	14,830,000
Total water discharge	m <sup>3</sup>	NR	NR	NR	21,270,000	21,260,000
<b>WASTE</b>						
Total non-hazardous waste	tonnes	NR	NR	NR	20,410	27,090
Non-hazardous waste reused	tonnes				12,370	15,010
Total hazardous waste	tonnes	NR	NR	NR	2,820	6,595
Hazardous waste sent for recycling	tonnes	NR	NR	NR	120	12

**A note on restatements:** We will restate annual data if there is a material change of five per cent or more.

NR: Not reported

- <sup>1</sup> We report all environmental information, including GHG emissions, using the operational control approach. This means we report 100 percent of GHG emissions from facilities that we operate regardless of financial ownership.
- <sup>2</sup> Emission-limiting regulations include jurisdictions with industrial carbon regulation. 2020 data has been restated since the publication of our 2020 ESG report to correct a calculator error.
- <sup>3</sup> 2019 data is being restated since the publication of our 2020 ESG report to correct a calculator error.
- <sup>4</sup> Hazardous air pollutants (HAPs) are defined by the EPA as those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. The EPA provides a list of HAPs in "The Clean Air Act Amendments of 1990 List of Hazardous Air Pollutants."
- <sup>5</sup> Regulatory/Permit Exceedance (RPE) includes reportable spills and other non-compliances with federal, provincial/ state, or municipal approval, permit, or regulatory requirements with potential for adverse impact. This metric excludes administrative non-compliances and reports to the regulator related to minor issues such as instrument downtime, labeling, and signage.
- <sup>6</sup> A refinement in the methodology used in 2021 led to a restatement of the 2020 data to ensure comparability.
- <sup>7</sup> Water stress as classified by the World Resources Institute's (WRI) Aqueduct Water Risk Atlas tool, High (40–80 percent) or Extremely High (>80 percent) Baseline Water Stress.



SOCIAL	UNITS	2017	2018	2019	2020	2021
<b>EMPLOYEE AND CONTRACTOR SAFETY</b>						
Recordable injury rates – employees		0.45	0.32	0.29	0.08	0.16
Recordable injury rates – contractors		0.77	0.53	0.48	0.49	0.35
Recordable injury rates – combined	count per 200,000	0.61	0.41	0.37	0.26	0.27
Lost time injury rate – employees	exposure hours	0.10	0.10	0.06	0.04	0
Lost time injury rate – contractors		0.07	–	0.03	0.04	0.03
Lost time injury rate – combined		0.09	0.06	0.04	0.04	0.02
Fatalities – employees and contractors	count	0	0	0	0	0
Vehicle incidents <sup>8</sup>	count	60	36	61	35	50
Near misses (near hits) <sup>9</sup>	count	563	551	544	627	1,002
Safety interactions <sup>10</sup>	count	65,662	67,260	65,129	55,763	57,179
<b>PROCESS SAFETY</b>						
Total process fires (uncontrolled + controlled)	events	17	21	12	10	14
Flammable Loss of Containment (FLOC) <sup>11</sup>	events	47	52	49	20	27
Process Safety Incidents Count (PSIC) – Tier 1	incidents	8	6	8	1	2
Process Safety Incidents Count (PSIC) – Tier 2	incidents	15	8	10	8	11
Process Safety Total Incident Rate (PSTIR) <sup>12</sup>	incidents per 200,000 worked hours	0.16	0.13	0.18	0.03	0.06
Process Safety Incident Severity Rate (PSISR) <sup>13</sup>	severity-weighted rate of incidents per 200,000 hours worked	0.50	0.39	0.49	0.09	0.29
<b>TRANSPORTATION SAFETY</b>						
Total number of transportation incidents	count	9	16	24	22	57
Reportable transportation incidents <sup>14</sup>	count	3	1	2	5	5
Non-Accident Releases (NARs) <sup>15</sup>	count	0	0	0	0	0

<sup>8</sup> Vehicle Incidents include only driving-related vehicle incidents, and excludes any incidents involving powered mobile equipment or rail.

<sup>9</sup> Near hits: A near hit is an unplanned event that did not result in undesirable consequences but had the potential to do so. We encourage near-hit reporting because it is a proactive leading indicator that enables us to identify and address a hazardous situation before an incident occurs.

<sup>10</sup> Safety interactions are peer interactions about safe or at-risk behaviors. We encourage employees to speak up when they see positive or at-risk behaviors, as part of a Responsible Care mindset.

<sup>11</sup> Flammable loss of containment events (FLOCs) are incidents that involve an unanticipated leak or spill of flammable material.

<sup>12</sup> Process Safety Total Incident Rate is calculated using the American Petroleum Institute (API) recommended practice 754 from 2016. This rate is based only on Tier 1 incidents, which aligns with SASB recommendations. 2017 data has been restated since the publication of our 2020 ESG report to reflect improved data calculations.

<sup>13</sup> Process Safety Incident Severity Rate (PSISR) is calculated using the American Petroleum Institute (API) recommended practice 754 from 2016. This aligns with SASB recommendations. 2017 data has been restated since the publication of our 2020 ESG report to reflect improved data calculations.

<sup>14</sup> Consistent with the International Council of Chemical Associations (ICCA) Guidance for Reporting Performance, an incident causing one of the following: direct involvement of authorities and/or emergency services, evacuation of people, or closure of public traffic routes for at least three hours; any release of more than 50 kg/L of dangerous goods or more than 1,000 kg/L of non-dangerous goods; any damage of more than 50,000 Euro (including environmental cleanup) resulting from a transport incident; or a death or injury leading to intensive medical treatment, a stay in hospital of at least one day, or an absence from work of more than three days.

<sup>15</sup> Non-accident releases are the unintentional releases of a hazardous material during rail transportation, including loading and unloading while in railroad possession, that is not caused by a derailment, collision, or other rail-related accident.



SOCIAL CONTINUED	UNITS	2017	2018	2019	2020	2021
<b>PRODUCT SAFETY</b>						
High-priority products with product risk profile <sup>16</sup>	percent	100	100	100	100	100
Incidents of non-compliance (e.g., product recalls and allegations) concerning the health and safety of products <sup>17</sup>	count	0	0	0	0	0
Products subject to information requirements <sup>18</sup>	percent	100	100	100	100	100
Percentage of revenue from products that contain Canadian Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances	percent	NR	NR	NR	8	11
Percentage of such products that have undergone a hazard assessment	percent	NR	NR	NR	100	100
<b>EMPLOYEES</b>						
Total number of employees	count	2,857	2,885	2,906	2,351	2,456
Full time	count	2,782	2,820	2,836	2,303	2,422
Part time	count	75	65	70	48	34
Women	count	707	710	711	592	616
Men	count	2,150	2,175	2,195	1,759	1,840
Employees in the U.S.	count	559	578	581	291	273
Employees in Canada	count	2,283	2,291	2,309	2,051	2,174
Employees covered by collective bargaining agreements	percent	12	11	11	8	8
Total new hires	count	168	220	210	84	252
Rate of new hires	percent	6	8	7	4	10
Voluntary (retire/resign) turnover	percent	5	5	5	10	4
Total turnover (voluntary & involuntary)	percent	6	7	6	18	6
Women at various levels						
Total workforce	percent	NR	NR	NR	25	25
Board of Directors	percent	NR	NR	NR	0	0
Management <sup>19</sup>	percent	NR	NR	NR	22	23
Executives	percent	NR	NR	NR	20	14
Demographics						
30 years and under	percent	NR	NR	NR	13	13
30 to 50	percent	NR	NR	NR	55	56
50-plus	percent	NR	NR	NR	32	31

<sup>16</sup> Interpreted for application to NOVA Chemicals as percentage of high-priority products (based on our prioritization process) with a product risk profile available to the public.

<sup>17</sup> Interpreted for application to NOVA Chemicals as incidents of non-compliance specifically limited to U.S. EPA Toxic Substances Control Act (TSCA) allegations, U.S. Food and Drug Administration (FDA) product recalls, and Canadian equivalents. Non-compliance with voluntary codes is not included.

<sup>18</sup> Products subject to information requirements for content, safe use, and/or disposal.

<sup>19</sup> 2020 data revised to align methodology with target.





SOCIAL CONTINUED	UNITS	2017	2018	2019	2020	2021
<b>COMMUNITIES</b>						
Community investment	\$	2,409,998	2,479,642	2,390,635	2,017,962	2,181,637
Volunteerism (hours) <sup>20</sup>	hours	5,836	6,136	5,934	2,248	1,396
<b>ECONOMIC VALUE GENERATED AND DISTRIBUTED</b>						
Revenues	million USD	3,844	4,195	3,343	3,207	5,061
Payments to governments (taxes paid net of refunds) <sup>21</sup>	million USD	68	-17	-3	-61	-43
Payments to employees (salaries and benefits)	million USD	464	465	473	414	472
Capital expenditures	million USD	531	449	793	688	670
<b>ADDITIONAL INFORMATION ON TAXES</b>						
Income and property taxes paid <sup>22</sup>	million USD	72	14	119	14	15
Income tax refunds received <sup>23</sup>	million USD	4	31	122	75	58
Taxes paid, net of refunds <sup>24</sup>	million USD	68	-17	-3	-61	-43

GOVERNANCE	UNITS	2017	2018	2019	2020	2021
<b>BUSINESS ETHICS AND ANTI-CORRUPTION</b>						
Matters received	count	95	92	93	87	80
Questions	count	66	54	63	63	53
Allegations of Code violations	count	29	38	30	24	27
Unsubstantiated	count	19	17	14	17	14
Substantiated	count	10	16	16	6	9
Remained open at year end	count	0	5	0	1	4
Number of employees who signed Code of Conduct	count	NR	2,790	2,700	2,300	2,400
Number of employees who received mandatory training	count	NR	220	2,900	2,400	2,440
Number of employees who received optional training courses	count	NR	250	300	425	684
<b>CATEGORIES FOR ALLEGATIONS AND QUESTIONS</b>						
Accounting, auditing, and financial reporting	percent	0	3	0	0	0
Business integrity	percent	59	67	85	78	93
HR, diversity, and workplace respect	percent	12	21	15	22	11
Environment, health, and safety	percent	5	9	1	14	3
Misuse, misappropriation of corporate asset	percent	0	1	0	0	8

<sup>20</sup> 2020 and 2021 hours reflect COVID-19–related restrictions.

<sup>21</sup> Includes only income and property tax. Excludes sales taxes [goods and services tax (GST), harmonized sales tax (HST), Québec sales tax (QST)].

<sup>22</sup> NOVA Chemicals is committed to transparency and responsible tax payments. We are guided by tax principles that follow the intent of the law in our tax calculations and payments. Although our revenues have not decreased significantly in the last five years, income tax paid has decreased, and in 2018, 2019, and 2020 we received refunds in excess of taxes paid. In 2017 and 2018, tax losses were created as a result of unfavorable litigation. The losses were carried back and applied against taxable income in prior years to recover cash tax previously paid. The refunds were received in 2018 and 2019. In 2019, our income tax rate decreased because the Alberta Job Creation Tax Cut bill came into effect, reducing the income tax rate for Alberta-based businesses to incentivize job creation.

<sup>23</sup> We received tax refunds from tax authorities/governments after their assessment of our tax obligations.

<sup>24</sup> This figure is our taxes paid minus tax refunds. In 2018, 2019, 2020, and 2021 the refunds exceeded the taxes we paid. However, in February 2022, we paid \$230 million to Canadian taxation authorities for income taxes payable on 2021 earnings. NOVA Chemicals was not required to pay cash tax installments in 2021 and, as a result, the full balance of tax associated with earnings in 2021 was due in February 2022.



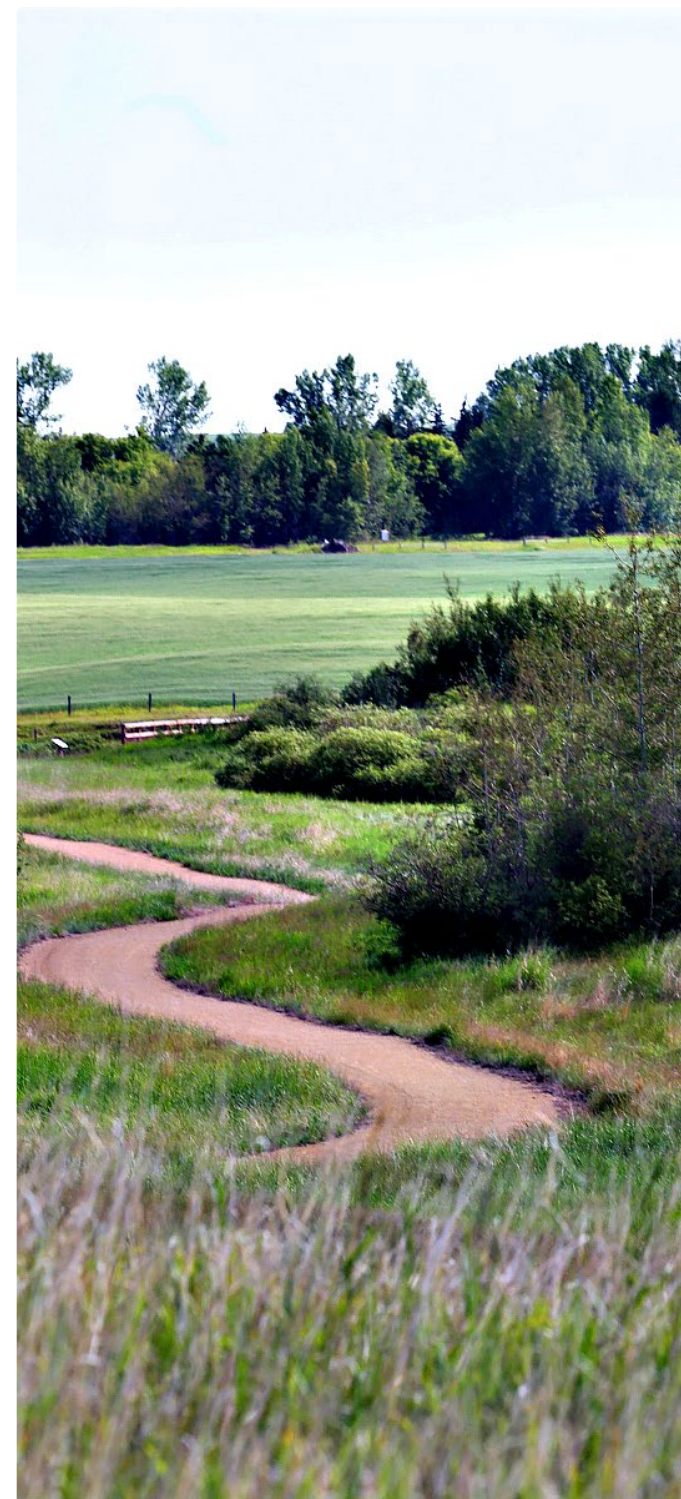
# Appendix

This report has been prepared in accordance with the GRI Standards: Core option. This section contains additional disclosures to fulfill GRI and other requirements, which are not addressed elsewhere in this report. For more information on the GRI please visit the [GRI website](#).

## Material Topic Boundaries

We report on the topics that are most relevant to our stakeholders and can impact the success of our business. We determined our material topics, and their boundaries, during our biannual materiality assessment in 2020. For the purposes of GRI reporting, the topics covered under our Priority and Foundational Topics are considered material topics.

	SUPPLIERS/ CONTRACTORS	NOVA CHEMICALS' FACILITIES AND LOCATIONS	CUSTOMERS	COMMUNITIES	SOCIAL INTEREST
Plastics circular economy		●	●		●
Climate care	●	●	●	●	●
Inclusion and diversity		●			
Ethics	●	●	●		
Air emissions	●	●		●	
Water and waste	●	●		●	
Employee and contractor safety	●	●			
Process safety		●	●	●	
Transportation safety	●	●	●	●	
Product safety	●	●	●		●
Responsible supply chain	●	●			





## Engagement with Interested Parties

Our continued success depends on understanding and respecting the needs and concerns of interested parties at every stage of our operations. We consider interested parties to be people or groups who are directly or indirectly affected by our operations, those who perceive themselves to be affected by a decision or activity, and those who have the ability to influence outcomes. The table below illustrates the range of interested parties with whom we interact, the concerns they have raised, and how we engage with them.

INTERESTED PARTIES	TOPICS AND CONCERNS		HOW WE ENGAGE	
<b>Communities and Indigenous Communities</b>	<ul style="list-style-type: none"> <li>Public safety</li> <li>Environmental and social impacts</li> <li>Employment</li> <li>Noise, light, and traffic</li> </ul>	<ul style="list-style-type: none"> <li>Support for community programs</li> <li>Cumulative effects of production</li> <li>Plastics sustainability</li> </ul>	<ul style="list-style-type: none"> <li>Callout system</li> <li>Conversations</li> <li>Community advisory panels</li> <li>Neighbor events/open houses</li> </ul>	<ul style="list-style-type: none"> <li>Volunteer activities</li> <li>Newsletters</li> <li>Website community information</li> <li>Responsible Care verification</li> </ul>
<b>Employees</b>	<ul style="list-style-type: none"> <li>Fair total compensation</li> <li>Safe work environment</li> <li>Career development</li> <li>Work/life balance</li> </ul>	<ul style="list-style-type: none"> <li>Impact of employee work on society</li> <li>Environmental and social impacts</li> </ul>	<ul style="list-style-type: none"> <li>Newsletters</li> <li>Employee sessions</li> <li>Quality conversations</li> </ul>	<ul style="list-style-type: none"> <li>Engagement surveys</li> <li>Intranet and direct emails</li> <li>Volunteer opportunities</li> </ul>
<b>Customers</b>	<ul style="list-style-type: none"> <li>Cost</li> <li>Quality</li> <li>On-time delivery</li> <li>Mutual development benefits</li> </ul>	<ul style="list-style-type: none"> <li>Safety</li> <li>Lifecycle of products</li> <li>Plastic sustainability</li> <li>Greenhouse gas (GHG) emissions</li> </ul>	<ul style="list-style-type: none"> <li>Direct engagement (meetings and events)</li> <li>Joint development programs</li> <li>Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>Product information</li> <li>Training/technical support</li> <li>Innovation</li> <li>Conferences</li> </ul>
<b>Suppliers</b>	<ul style="list-style-type: none"> <li>Stability</li> <li>Growth plans</li> </ul>	<ul style="list-style-type: none"> <li>Fair treatment</li> <li>Mutual development benefits</li> </ul>	<ul style="list-style-type: none"> <li>Meetings</li> <li>Joint development programs</li> </ul>	<ul style="list-style-type: none"> <li>Training</li> <li>Technical support</li> </ul>
<b>Owner</b>	<ul style="list-style-type: none"> <li>Return on investment</li> <li>ESG performance</li> </ul>	<ul style="list-style-type: none"> <li>Strong governance and succession</li> <li>Strategic planning</li> </ul>	<ul style="list-style-type: none"> <li>Board meetings</li> <li>Board site visits</li> </ul>	<ul style="list-style-type: none"> <li>Regular correspondence</li> <li>Reports</li> </ul>
<b>Governments/Regulators</b>	<ul style="list-style-type: none"> <li>Impact to communities</li> <li>Corporate responsibility</li> <li>Investment</li> </ul>	<ul style="list-style-type: none"> <li>Compliance requirements</li> <li>Taxes</li> <li>Climate change and plastic pollution</li> </ul>	<ul style="list-style-type: none"> <li>Reporting</li> <li>Periodic conversations</li> </ul>	<ul style="list-style-type: none"> <li>Policy advocacy</li> </ul>
<b>Providers of Capital</b>	<ul style="list-style-type: none"> <li>Long-term success</li> <li>Return on investment</li> </ul>	<ul style="list-style-type: none"> <li>Cash generation/interest payments</li> <li>GHG emissions</li> </ul>	<ul style="list-style-type: none"> <li>Conference calls</li> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Conversations</li> </ul>
<b>Industry Associations</b>	<ul style="list-style-type: none"> <li>Advocacy for industry</li> </ul>		<ul style="list-style-type: none"> <li>Industry association meetings</li> <li>Conferences</li> </ul>	<ul style="list-style-type: none"> <li>Industry surveys</li> </ul>





## GRI Index

This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards: Core option.

We also provide information on topics and indicators beyond those required to fulfill the requirements of the Core option.

GENERAL DISCLOSURES		PAGE
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102-11	Precautionary principle or approach	Note 1
102-12	External initiatives	<a href="#">15-16</a>
102-13	Memberships	<a href="#">66</a>
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102-18	Governance structure, board committees	<a href="#">54</a>
102-40	List of stakeholder groups	<a href="#">77</a>
102-41	Collective bargaining agreements	<a href="#">74</a>
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102-43	Approach to stakeholder engagement	<a href="#">50-51</a> <a href="#">66</a> <a href="#">77</a>
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102-45	Entities included in financial statements	Note 2
102-46	Process to determine report content	<a href="#">10</a>
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102-48	Restatement of information from previous reports	<a href="#">72-75</a>
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102-50	Reporting period	<a href="#">9</a>
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102-52	Reporting cycle	<a href="#">8</a>
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We provide the most complete information and data available for all the indicators required to report in accordance with GRI Standards: Core option. In some cases, data breakdown by country, gender, or other specific categories is not available or cannot be provided for privacy concerns.

Note 1: Although NOVA Chemicals has not formally adopted the precautionary principle, our consistent implementation of Responsible Care standards demonstrates a commitment to proactively identify and prevent or mitigate negative impacts.

Note 2: As a privately held company, NOVA Chemicals does not have publicly available financial statements.

Note 3: Previously reported Scope 3 emissions data are not included in this report, as we continue to refine our quantification methodology and approach to support future reporting of Scope 3 emissions.



TOPIC-SPECIFIC DISCLOSURES		PAGE
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<b>WORKPLACE PRACTICES</b>		
103	Occupational and process safety, management approach	<u>34-36, 39</u>
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401-1	New employee hires and employee turnover	<u>74</u>
403-1	Occupational health and safety management system	<u>57</u>
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403-9	Work-related injury rates and fatalities	<u>73</u>
403-6	Promotion of worker health	<u>48</u>
404-2	Programs for upgrading employee skills/transition assistance	<u>46-47</u>
<b>PRODUCT RESPONSIBILITY</b>		
103	Plastics circular economy, management approach	<u>13-16</u>
103	Product safety, management approach	<u>41-42</u>
416-1	Percentage of significant products for which health and safety impacts are assessed for improvement	<u>74</u> , Note 4
416-2	Number of incidents of non-compliance concerning the health and safety of products	<u>74</u> , Note 5
417-1	Requirements for product and service information and labeling	<u>74</u>

Note 4: Interpreted for application to NOVA Chemicals as percentage of high-priority products (based on our prioritization process) with a product risk profile available to the public.

Note 5: Interpreted for application to NOVA Chemicals as incidents of non-compliance specifically limited to U.S. Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) allegations, U.S. Food and Drug Administration (FDA) product recalls, and Canadian equivalents. Non-compliance with voluntary codes is not included.



## SASB Index

Below are the quantitative metrics and references to qualitative descriptions in this report that align with the Sustainability Accounting Standards Board (SASB) standard for the Chemicals industry. The Sustainability Accounting Standards Board is a non-profit organization with the goal of enabling businesses around the world to identify, manage, and communicate financially material sustainability information to their investors.

SASB REF	SASB SUGGESTED DISCLOSURES	2021 DATA
<b>GHG EMISSIONS</b>		
RT-CH-110a.1	Gross global Scope 1 emissions	3,820 kilotonnes
RT-CH-110a.1	Percentage of Scope 1 emissions covered under emissions-limiting regulations	85%
RT-CH-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	<a href="#">pages 21-22</a>
<b>AIR QUALITY</b>		
RT-CH-110a.3	NOx (excluding N <sub>2</sub> O)	4,728 tonnes
RT-CH-110a.3	SOx	298 tonnes
RT-CH-110a.3	Volatile organic compounds (VOCs)	1,461 tonnes
RT-CH-110a.3	Hazardous air pollutants (HAPs)	55 tonnes
<b>ENERGY MANAGEMENT</b>		
RT-CH-130a.1	Total energy consumed	113,800,000 GJ
RT-CH-130a.1	Total purchased electricity	1,648,000 MWh
RT-CH-130a.1	Percentage renewable electricity purchased	0%
RT-CH-130a.1	Self-generated electricity	0 MWh
<b>WATER MANAGEMENT</b>		
RT-CH-140a.1	Total water withdrawn	40,150,000 m <sup>3</sup>
RT-CH-140a.1	Total water consumed	Not reported
RT-CH-140a.1	Percentage water withdrawn in regions with High or Extremely High Baseline Water Stress	37%
RT-CH-140a.1	Percentage water consumed in regions with High or Extremely High Baseline Water Stress	Not reported
RT-CH-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	0
RT-CH-140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks	<a href="#">pages 27-28</a>
<b>HAZARDOUS WASTE MANAGEMENT</b>		
RT-CH-150a.1	Amount of hazardous waste generated	6,595 tonnes
RT-CH-150a.1	Percentage hazardous waste recycled	0%
<b>COMMUNITY RELATIONS</b>		
RT-CH-210a.1	Discussion of engagement processes to manage risks and opportunities associated with community interests	<a href="#">pages 50-52, 77</a>





SASB REF	SASB SUGGESTED DISCLOSURES	2021 DATA
<b>WORKFORCE HEALTH &amp; SAFETY</b>		
RT-CH-320a.1	Total recordable incident rate (TRIR) (incidents per 200,000 hours worked)	0.27
RT-CH-320a.1	Fatalities	0
RT-CH-320a.1	Near misses (total not rate)	1,002
RT-CH-320a.2	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	<a href="#">page 48</a>
<b>PRODUCT DESIGN FOR USE-PHASE EFFICIENCY</b>		
RT-CH-410a.1	Revenue from products designed for use-phase resource efficiency	Not reported
<b>SAFETY &amp; ENVIRONMENTAL STEWARDSHIP OF CHEMICALS</b>		
RT-CH-410b.1	Percentage of revenue from products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances	11%
RT-CH-410b.1	Percentage of GHS 1 and 2 products that have undergone a hazard assessment	100%
RT-CH-410b.2	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	<a href="#">pages 41-42</a>
<b>GENETICALLY MODIFIED ORGANISMS</b>		
RT-CH-410c.1	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Not applicable
<b>MANAGEMENT OF THE LEGAL &amp; REGULATORY ENVIRONMENT</b>		
RT-CH-530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	<a href="#">page 66</a>
<b>OPERATIONAL SAFETY, EMERGENCY PREPAREDNESS &amp; RESPONSE</b>		
RT-CH-540a.1	Process Safety Incidents Count (PSIC), Tier 1	2 incidents
RT-CH-540a.1	Process Safety Incidents Count (PSIC), Tier 2	11 incidents
RT-CH-540a.1	Process Safety Total Incident Rate (PSTIR) (incidents per 200,000 hours worked)	0.06
RT-CH-540a.1	Process Safety Incident Severity Rate (PSISR) (severity-weighted rate of incidents per 200,000 hours worked)	0.29
RT-CH-540a.2	Number of transport incidents	5 incidents

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