

# Climate Risk and Resilience Report 2020



# About this report

Suncor has an extensive history of reporting on our environment, social and governance performance in our annual Report on Sustainability, Management Proxy Circular, Annual Information Form/Form 40-F, and through submissions to several third-party indices and climate change reporting organizations.

We appreciate that all stakeholders may benefit from further information on how Suncor is addressing climate change and our perspective on the energy future. Sharing how we manage climate change risks and evaluate opportunities also promotes collaborative learning with our stakeholders on carbon reduction initiatives and performance.

Now in our fourth annual update, this climate report complements sustainability performance information in our annual Report on Sustainability and enables continuous improvement in our approach to climate-related financial disclosures.

We are continuously evaluating appropriate disclosure channels to ensure we can provide a transparent and wide-ranging discussion on our climate strategy over the long term while recognizing the challenges of providing forward-looking information within regulatory financial disclosure requirements.

[sustainability.suncor.com](https://sustainability.suncor.com)

As of July 15, 2020

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## CFO message



**Alister Cowan** chief financial officer

Addressing climate change remains one of the world's most complex and pressing challenges. It has the potential to affect all aspects of our society, and collectively, we all have a part to play in transforming the energy system to reduce emissions while supporting a prosperous and safe world.

In line with the rising urgency around climate change, interest and engagement from the capital markets have increased in recent years. The energy sector, in particular, has drawn significant attention from investors and financial institutions on climate change risk. Much of the financial sector including pension funds, asset managers, banks and insurers, have coalesced around the recommendations from the Task Force on Climate Related Financial Disclosures (TCFD). Suncor publicly declared support for the TCFD recommendations in 2018.

We recognize the importance of carbon risk and engaging with our shareholders and financial partners on this risk. As such, I am happy to share the fourth edition of Suncor's dedicated disclosure on climate risk and resilience. Carbon management has been a focus for our business for decades and we're making significant progress to achieve our current goal to reduce our GHG emissions intensity by 30% by 2030. We also value active engagement with investors and financial partners directly and through organizations like Climate Action 100+ and Ceres. These opportunities allow us to share knowledge and seek bold new approaches for continued business success.

We've used the TCFD recommendations to structure our report, provide information to support decision making, and continue supporting high-quality engagement. I encourage you to read about our GHG performance and robust governance approach. We also share some of our notable investments in low-carbon technology and our strategy

to remain successful in a rapidly transforming world including insights from our new 2°C scenario.

Despite a challenging economic environment today, we continue to invest in reducing emissions from our base business as well as new opportunities for energy system transformation, as these are critical to business resiliency and long-term shareholder value.

While we have plans for further investment in the energy transition, the market downturn and global pandemic have required us to adjust the timing of some initiatives. To ensure the financial health of the business, we delayed the replacement of our coke-fired boilers and the Forty Mile Wind Power Project. These decisions are clear reminders that we depend on a financially healthy business today to support investments in low-carbon innovations for tomorrow.

Our portfolio of high-quality assets, prudent management and strong investment-grade credit rating, along with our history of transparent climate disclosure and active engagement, have established Suncor as a trusted provider of energy in Canada. Our strategy, commitment to shareholder value, and our focus on sustainability position us well in a low-carbon future.

A handwritten signature in black ink, appearing to be 'Alister Cowan', written in a cursive style.

Alister Cowan  
chief financial officer

# Our perspective

We support the Paris Agreement to limit global temperature rise to below 2°C. This requires an urgent and collaborative effort from all governments, businesses and individuals to reduce greenhouse gas (GHG) emissions while meeting the world's energy needs. Solutions across all parts of the economy must be pursued, addressing improvements to existing energy systems and implementing new energy sources to advance the energy transformation the world needs.

Suncor is well positioned for this transformation with a strong upstream portfolio integrated with efficient downstream refineries and strategic investments in new technology and low-carbon innovation to reduce carbon emissions and lower costs across all aspects of our business. In addition to stewarding our 2030 goal to reduce GHG intensity, carbon risk is embedded within Suncor's approach to governance and decision-making.

We have supported the desire for consistency and transparency embodied in the Task Force on Climate-related Financial Disclosures (TCFD) recommendations since 2018, and view information disclosed in alignment with those recommendations as foundational for stakeholder engagement. Information that follows provides GHG emissions trends, our strategy and progress toward our GHG goal, updated information on our input into climate policy development, and our engagement activities including embedding sustainability considerations within our supply chain.

We also share our approach to innovation and how our foundational governance framework and risk processes ensure we address climate threats and opportunities appropriately. New this year, we are introducing our 2°C scenario, developed to inform our long-term business planning and corporate strategy. We welcome the evolution of standardized and consistent climate risk disclosure to meet the needs of all stakeholders and contribute to understanding the requirements of transforming to a low-carbon future.

## Performance highlights

We are aiming to reduce our emissions intensity by continuing to drive operational efficiency improvements while accelerating the adoption of new technology. We are measuring our progress towards a goal of achieving a 30% GHG emissions intensity reduction of our products by 2030 relative to a 2014 baseline. At the end of 2019, we had achieved approximately 10% reduction against this baseline and we continue to pursue opportunities to advance low-carbon energy<sup>1</sup>.

In 2019, our total absolute GHG emissions rose approximately 4% compared to 2018 primarily due to Fort Hills operating at higher rates as it ramped up from commissioning in 2018; although this asset operated at lower-than-optimal utilization due to the Government of Alberta mandatory production curtailment<sup>2</sup>. However, company-wide GHG emissions intensity remained relatively flat, as 2018 and 2019 performance reflect the benefits of the low-carbon paraffinic froth treatment (PFT) technology deployed at Fort Hills.

In order to meet our GHG performance goal there must be additional advances in technology. Suncor continues to significantly invest in technology development and deployment, to optimize current assets and develop next-generation facilities. We believe technology and innovation have the potential to move emissions reduction from incremental to step-change improvements, particularly beyond 2030 when many of these technologies are expected to be commercially available.

<sup>1</sup> We expect there to be impacts to our GHG intensity due to government mandated production curtailment and COVID-19 impact on demand.

<sup>2</sup> <https://www.alberta.ca/oil-production-limit.aspx>

# Leading energy system transformation



## Advancing solutions through engagement

Transitioning an energy system requires a shift in social, cultural, technological and economic parameters and a shared vision for the future. Through both Suncor and the Suncor Energy Foundation, we support organizations that engage Canadians in meaningful discussions on the energy system and the connections between the environment and the economy. We are working with our foundation partners to promote an understanding of the changing energy realities of the 21<sup>st</sup> century and raise awareness among Canadians of the role their choices and lifestyles play in reducing emissions.

Collective dialogue and collaboration are important elements of how we develop relationships to understand diverse perspectives, experiences and viewpoints about the role we all play in creating our energy future. While our views on the pathways to achieving this future may not always align, we can all agree on the need to sustainably produce energy that enhances peoples' lives while caring for each other and the earth.

Over the past year, we engaged with stakeholders through meetings, workshops and conferences. We also advanced supplier engagement efforts and worked together to create more environmental and social impact opportunities within Suncor and the broader marketplace. We are committed to engaging in different ways and we look forward to opportunities to build mutual understanding within the solution space. Examples of these collaborations and highlights over the past year include:

- Partnering with the Energy Futures Lab, a multi-sector collaboration designed to convene a diverse range of stakeholders to help shape the energy future and strengthen Alberta and Canada's position as a global energy leader.
- Working collaboratively to support reconciliation with Indigenous Peoples through leadership development and building community capacity including a focus on environmental priorities.
- Hosting an annual Ceres<sup>3</sup> – facilitated stakeholder panel to review our sustainability progress. In 2019, we received valuable input on our climate scenario analysis, thoughts on further advancing sustainability within our supply chain and improving the usefulness of a sustainability prioritization framework.
  - Key takeaways from this session included support for our use of scenarios, encouragement for more proactive leadership in pursuit of strategic resilience, and the importance of advancing social innovation initiatives. We've responded by providing added disclosure on some of these topics both in this report and in our Report on Sustainability.
- Holding a second engagement with Climate Action 100+. The discussion ranged from Suncor's vision for an energy transition, climate scenario analysis, and the need for emission reduction metrics within compensation programs. We expect engagement to continue in 2020.

3 Ceres is a non-profit organization that works with investors and companies to build sustainability leadership and drive solutions for a healthy global economy.

## Leading energy system transformation

- Partnering with other companies and the investment community to hold an investor day of learning on the energy transition.
- Participation in several events to advance climate policy and sustainable energy development such as the Energy Disruptors conference, Singularity U Canada Summit, Emissions Reductions Alberta Carbon+ conference, Clean Energy Ministerial Meeting, and sustainable finance expert panel consultations including sustainable finance taxonomy for Canada.

Over the next year, we will continue engagement with investors, including the Climate Action 100+ initiative.

## Engagement with our supply chain

In 2019, we worked to identify baseline risks and opportunities within our supply chain. Through the supplier prequalification process, we now gather data and screen potential suppliers based on sustainability-related criteria. Annually we review our top 50 suppliers' sustainability reports, codes of conduct and [CDP Climate Change](#) responses. We have mapped our suppliers on a global basis and are working to better understand the sustainability risks and opportunities available.

We continue to hold strategic supplier meetings where we share best practices to achieve continuous improvement in sustainability performance throughout the value chain. These discussions contributed to the formalization of a supplier performance assessment survey that incorporates multiple sustainability factors, including questions to our suppliers related to emissions.

In early 2020, our senior leaders met with our key supplier community and industry partners to signal Suncor's intentions to transform relationships so we may accelerate innovation and sustainability performance. The event, called FORGE, created an opportunity to collaborate across the breadth of Suncor's supply chain toward a sustainable future together. We intend to build off the efforts of FORGE to embed sustainable practices in our supply chain, create opportunities for cross-value-chain strategic supplier engagement and enable supply chain contributions to innovation.



## Flight optimization

Collaboration between several Suncor teams and our airline partner, WestJet, led to further optimizing our charter flights to our Northern Alberta operations in 2019. By consolidating flights, we increased flight utilization by 7% and decreased greenhouse gas emissions by 27% from 2018 to 2019.

"Not only was it an opportunity to look at creating a regional working team to standardize the travel model across our operating groups," says Genevieve Dacabra, manager of aviation, "we also quickly saw the broader value in focusing on greenhouse gas emission reduction and working closely with our vendors on our triple bottom line."

Flights were optimized by looking at passenger demand and upcoming work schedules to eliminate flights or change to smaller aircraft. Some flights were consolidated to reduce the number of aircraft used. Operational directives to use less jet fuel based on passenger and baggage load information the day of flight, resulted in even fewer emissions per flight segment.

In 2019, our aviation team also added six new Indigenous service providers from across Canada for charter fixed-wing flights, helicopter and drone services.

## Collaborating and partnering to advance innovation

Innovation is best served by inviting the brightest minds and diverse perspectives to collaborate both within and outside our industry. We invest and participate in several initiatives all sharing the goal of addressing the most pressing environmental and economic challenges of the energy industry and amplifying climate actions, including:

- Co-founding **Evok Innovations** with Cenovus Energy and the BC Cleantech CEO Alliance Inc. This \$100 million technology fund (to which Suncor and Cenovus have each committed up to \$50 million over 10 years) focuses investments on enabling entrepreneurs to advance ideas to commercialize clean technologies and market them globally.
- Technology collaboration efforts through **Canada's Oil Sands Innovation Alliance (COSIA)**. Canada's largest oil sands producers pool expertise and intellectual property to advance technologies and improve performance in four environmental focus areas: GHG, water, tailings and land. COSIA also focuses on developing advanced monitoring technologies to increase the accuracy of area fugitive emissions quantification from our tailings ponds and mine face.

Suncor and other COSIA member companies are advancing the NRG COSIA Carbon XPRIZE, a global competition where international teams, including Canada, are proving their technologies can be economically scaled up to capture and transform CO<sub>2</sub> into valuable, useful products.

- Advancing the work of the **Clean Resource Innovation Network (CRIN)**, an industry-led group created to leverage the oil and gas industry's strengths and contribute to a future in which Canada is a global leader in producing clean hydrocarbon energy from source to end use. The network brings together diverse expertise and facilitates connections to advance technologies for use in Canada, and potentially for export to global markets.
- Investing in clean technology funds such as **ArcTern Ventures**, a Toronto-based venture capital firm investing globally in breakthrough clean technology companies addressing climate change and sustainability.



# Governance

## Board oversight of climate-related risks and opportunities

Suncor's Board of Directors and the management team are both responsible for reviewing company-wide objectives, goals and strategies for achieving them. The board oversees our Enterprise Risk Management (ERM) program, and annually reviews principal risks. Principal risks have the potential to impact or impair Suncor's ability to meet its strategic objectives. Carbon risk is one of these principal risks, requiring the full board to review external trends, carbon risk pathways, and Suncor's mitigation plans at least once a year.

The Environment, Health, Safety and Sustainable Development Committee (EHS&SD) of the board reviews carbon risk quarterly. Its oversight responsibilities include monitoring the effectiveness and integrity of Suncor's internal controls related to operational risks of physical assets and other sustainability matters. The committee also reviews policies and practices respecting operational risks as they relate to climate change.

In addition to overseeing principal risks, the board annually reviews business plans (including capital budget), and in doing so endorses the strategies reflected in long-range plans. The board's Governance Committee also annually assesses Suncor's planning and budgeting process.

Suncor's board practices on performance evaluation and compensation consider various environmental, social and governance factors by:

- evaluating senior executive performance annually against well-defined goals that support and reinforce Suncor's value drivers
- considering Suncor's performance against enterprise-wide sustainability goals related to safety, environmental (including GHGs) and social performance in determining the amount of annual incentive payments to the CEO.

## Role of senior leadership

As a member of the board, our chief executive officer leads an executive leadership team (ELT) that builds and implements a strategy to identify and realize high-quality opportunities while mitigating risks. Collectively, our ELT establishes strategic financial direction and operational objectives, and integrates carbon and climate change considerations into business planning and processes. The ELT also ensures we effectively deliver value chain integration, pursue technology development, support public policy and government interaction, and establish and maintain valuable external relationships.

To help inform the execution of our strategy, our leadership team also receives guidance through several internal collaborative groups which help guide decisions by providing advice and input on innovation and technology investments.

Our chief sustainability officer helps to elevate sustainability considerations and ensure they are properly represented in decision-making. This position reports directly to our CEO and collaborates with other ELT colleagues in strategy, operations and other departments, with focused climate-related accountabilities, including:

- communicating Suncor's carbon risk and mitigation measures to the board
- translating the strategic sustainability direction from the board into corporate action
- serving as a direct link to the Environment, Health, Safety & Sustainable Development (EHS&SD) Committee of the board who assess the risks and impacts of climate change issues on business and growth plans, review impacts of emerging climate legislation and regulations, and review public disclosures on carbon risk
- playing a critical role in supporting Suncor's public policy and government interaction and deepening Indigenous and stakeholder relationships and collaboration.



# Climate-related risk management

## Identifying, assessing and managing climate-related risks

Our commitment to a proactive Enterprise Risk Management (ERM) program contributes to effective decision-making through consistent identification and assessment of risks inherent to our assets, activities and operations. Evaluation of potential climate-related risks and opportunities is integrated consistently along with other economic, environmental and social factors into these decision-making processes and our overall ERM program.

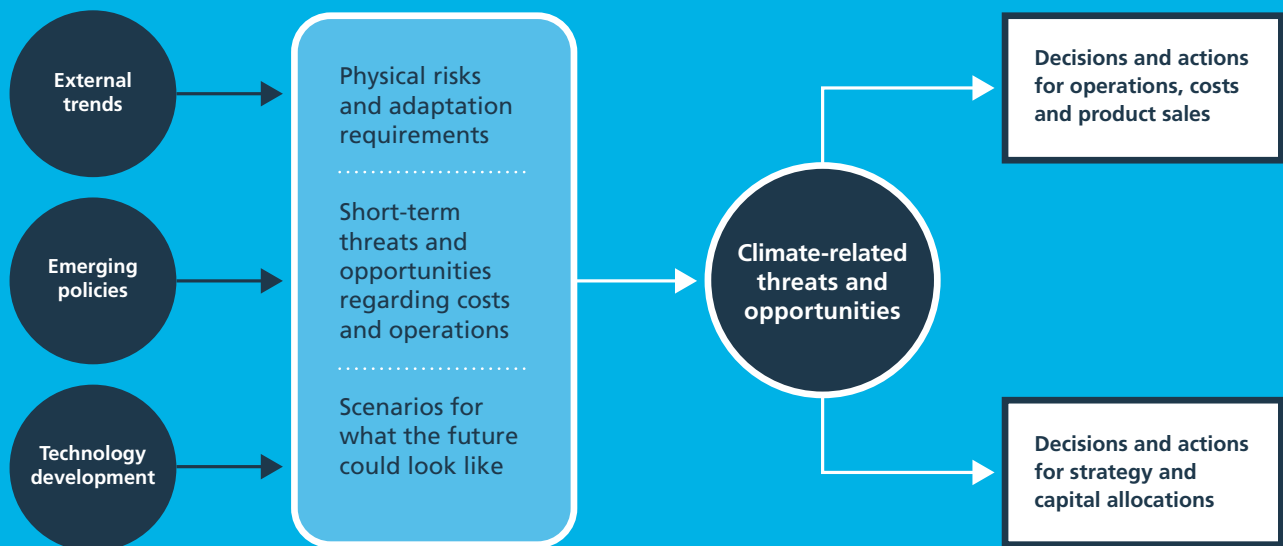
Climate-related risks can affect every aspect of our business. Our integrated approach to identifying and assessing climate-related risks addresses the influence and impacts of these risks across organizational boundaries and allows co-ordinated efforts to manage and mitigate the risk for the entire company. Board-level oversight of these risks and mitigation efforts and dedicated executive management ensures an integrated, co-ordinated approach across our business.

A dedicated risk matrix supports the assessment and prioritization of all risks and opportunities using a common measure of likelihood and consequence to identify different types of risk, including reputational, financial and environmental impacts.

Additional processes and risk management evaluation techniques include:

- an established strategic issues management process inclusive of climate change risks and opportunities
- an annual carbon price outlook developed to incorporate existing regulations and expected cost and credit trajectories into the economic evaluation of projects and assets in multiple scenarios
- internal project and asset development model, which includes a review of climate change implications early in the process and before the commitment of significant resources
- strategy formulation to enhance energy efficiency and to advance carbon reduction technologies through collaboration of cross functional teams including environmental engineering, corporate technology development, corporate strategy, and capital portfolio management
- an annual business unit and functional level assessment of key business risks and opportunities, including the potential physical risks posed by the effects of climate change, the outcomes of which feed into our overarching enterprise risk program and processes
- facility-focused GHG emissions forecasts which inform the potential impact of identified risks and optimize business planning.

## Integrated approach to evaluating threats and opportunities



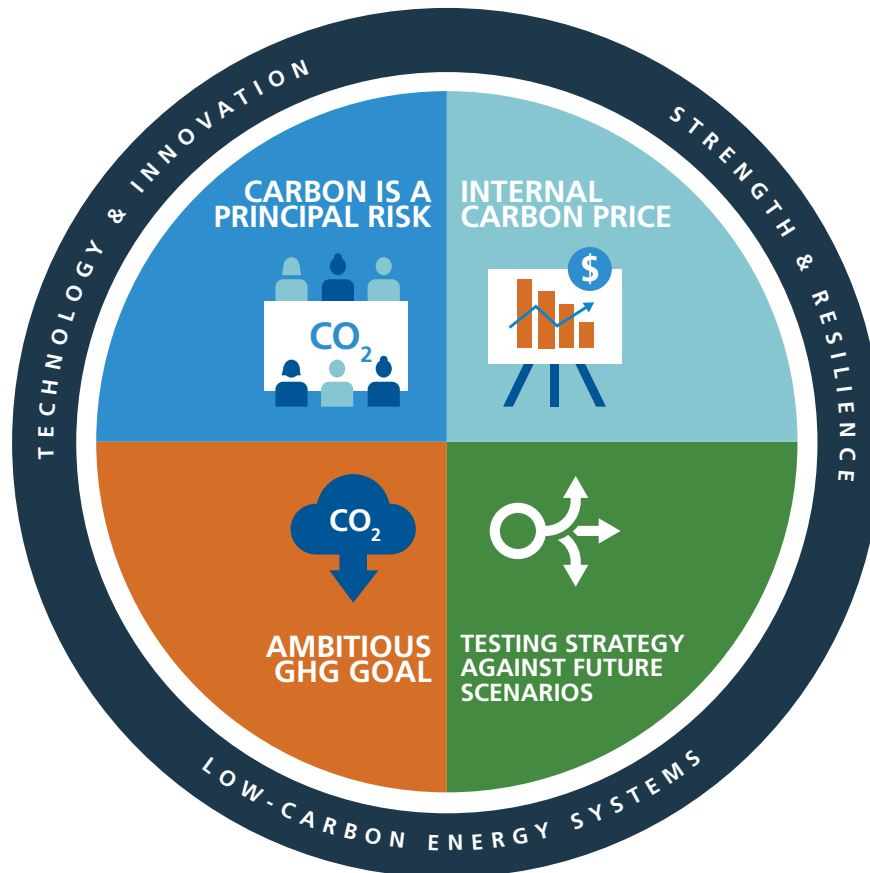
## Integration of carbon pricing into our decision-making processes

The energy system is changing, and our business is adapting to these changes. We consider several inputs to our planning process. Each year, as part of our normal integrated business planning process, we develop multiple price assumptions for a variety of economic variables, including carbon price forecasts.

For 2020 and all long-term planning, carbon prices consider existing regulations and their expected trajectory as they apply to our assets. Our business planning process also stress tests lower commodity prices combined with higher-carbon pricing, adding confidence to our capital decisions. These assumptions help evaluate all business, acquisition, divestiture, capital and strategic planning activities.

In addition to carbon price, we incorporate other climate-related considerations including:

- testing our portfolio against internal performance goals in the context of longer-term GHG impacts of our decisions
- understanding the impact to our business and long-term resilience by evaluating multiple scenarios, including higher-carbon pricing linked to 2°C pathways consistent with the Paris Agreement
- continued commitment to capital spending toward measurable reductions in our GHG emissions
- exploring opportunities that lower the carbon intensity of our products during the project development phase
- evaluating potential life-cycle emissions to determine credit generating opportunities.



## Facility resilience to extreme weather events

We assess specific risks to our physical assets, including the risk of extreme weather events, which are possible in the areas where we operate. We manage these risks through facility design and operational procedures, and maintain insurance for damage to, or loss of, assets as well as production interruption.

### Temperature extremes

Many of Suncor's facilities routinely operate in an annual temperature range of -40 to +40°C and are built to mitigate extreme weather events. Prolonged periods of extreme cold could force these facilities into extended shutdowns to ensure worker safety and prevent undue stress on equipment. Prolonged periods of extreme heat may lead to production cuts if an adequate supply of cooling water is not available. Suncor's refineries in Montreal and Sarnia have access to extremely large bodies of cooling water, greatly reducing exposure to this risk.

### Hurricanes and icebergs

Suncor's Terra Nova floating production, storage and offloading (FPSO) installation, off the coast of Newfoundland, operates in an area of the Atlantic, which is subject to extreme weather conditions.

Aboard the FPSO, we use a continuous weather tracking service to monitor storm systems in the North Atlantic, mitigating risks during hurricane season. There is also a risk in the region of icebergs causing damage to our installation. The risk is mitigated through facility design and a continuous monitoring system tracking iceberg locations. We complete regular flyovers to monitor movement of the icebergs and chart their paths. Where the course of an iceberg cannot be altered, an emergency response system allows the FPSO to disengage and move to safer water. While this results in production disruption, it protects the asset and mitigates environmental risks.

## Precipitation, droughts and wildfires

Most of Suncor's operated facilities are not in stressed watersheds where the availability of water, or severe restrictions on water withdrawals, could compromise our ability to operate. We manage limits to oil sands water withdrawal during winter low-flow periods through on-site water storage where facility design permits. The Commerce City refinery, owned and operated by our U.S subsidiary Suncor Energy (U.S.A) Inc., is located in a region with a future potential risk for water stress<sup>4</sup> where curtailment of water supply would require bringing in water by pipeline or truck. Water management is a priority at Suncor, driving industry-leading innovation at our facilities to reduce, recycle, reuse and return water.

There is also a risk of seasonal flooding in certain areas where we operate, which we manage through contingency plans to protect facilities including backup generators and pumps to drain critical operating units and equipment. In May 2020, the Regional Municipality of Wood Buffalo experienced severe flooding as a result of the spring ice break up. Although Suncor's oil sands operations were not affected, some of the community of Fort McMurray was evacuated and Suncor and other industry partners housed evacuees at camps within the region and assisted in the response.

Suncor's oil sands facilities are located within Canada's boreal forest and wildfires pose a risk to our operations and the communities nearby. To mitigate this risk, we manage our production facilities in line with FireSmart<sup>5</sup> guidance. We have detailed emergency preparedness and response plans in place to ensure emergency situations resulting from wildfire risks are managed effectively. Suncor also partners with other operators and the Regional Municipality of Wood Buffalo in mutual aid agreements to collectively manage emergencies.

<sup>4</sup> According to both the World Wildlife Fund's Water Risk Filter Tool and the World Resources Institute's Aqueduct Water Risk Atlas. These tools evaluate overall physical, regulatory and reputational risks at the watershed level and indicate that the Commerce City refinery in Colorado exists within a "medium-high" water stress region of the Mississippi River Basin, which indicates a future potential risk for water stress.

<sup>5</sup> FireSmart Canada leads the development of resources and programs designed to empower the public and increase community resilience to wildfire across Canada. More information is available at [firesmartcanada.ca](https://firesmartcanada.ca)

# Strategy

Suncor's energy transition strategy is to steadily improve the efficiency and reduce the carbon footprint of our base business while investing in new lower-carbon forms of energy, consumer products and services, consistent with our new purpose – to provide trusted energy that enhances people's lives, while caring for each other and the earth.



## Business strategy for a changing energy future

The global oil and gas industry has made structural adjustments over the past decade, largely through technology that unlocked shale oil and reduced the supply cost curve. As a new decade begins with focused attention on pandemic recovery efforts, business plans of leading companies must consider evolving trends and consumer preferences to be capable of thriving in a range of possible scenarios.

Emissions reduction strategies will need to consider broader technology and policy pathways in order to deliver energy to a growing global population, particularly the increased energy needs in developing economies. Fundamentally changing the energy mix moving forward will require a decoupling of economic growth and carbon emissions, and we expect oil demand and the role of oil in the global energy consumption mix to change.

As an integrated energy provider, we're able to leverage a strong value chain with a resourceful approach to reduce costs and lower the carbon intensity of our base business while investing in new forms of low-carbon energy, consumer products and services.

## Upstream

### Oil Sands

Suncor's Oil Sands operations are a concentrated oil play with a low decline, multi-decade resource base in the Athabasca oil sands located in northeastern Alberta. We have operated here for more than 50 years, with most of our production coming from this region. In low oil demand scenarios and correspondingly low oil price environments, the substantial scale and physical integration of our operations help to enhance a number of inherent advantages, including:

- minimal finding and exploration costs or risk
- long operating asset life, with steady output and low production decline rates
- leveraging location and logistical synergies between facilities allows us to drive efficiencies, improve reliability and enhance our environmental stewardship commitments including actions that support our GHG goal.

We continue to invest in strategic initiatives and technologies that support continuous improvement across our operations at both our Base Plant operations and Fort Hills. These include value chain optimization and automation of mining and upgrading through autonomous haul systems (AHS). This technology is now fully deployed at our North Steepbank Extension mine at Base Plant and full deployment at our Fort Hills mining project is projected in 2020.

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Our ownership in the Syncrude joint operation creates opportunities to leverage our deep operating experience and to share technical and reliability best practices with the operator to further advance energy efficiency improvements.

For our in situ operations, we're advancing opportunities and investments to reduce the energy intensity of the extraction process for our existing and future assets. Work is progressing on solvents, wellbore enhancement and decarbonizing steam generation.

### Offshore oil production

Suncor has an interest in every major operating asset offshore of Canada's east coast. Suncor operates Terra Nova and has interests in the Hibernia, White Rose and Hebron projects. We are a non-operating partner in the Buzzard and Golden Eagle fields in the United Kingdom North Sea and have expanded our options in this area through the purchase of a participating interest in the Rosebank pre-development opportunity. We also have non-operated interests in the Oda and Fenja developments located in the Norwegian Sea. With diligent management of produced methane, offshore crude oil is generally among the lowest carbon intensity sources of crude globally.

### Low-carbon and renewable power generation

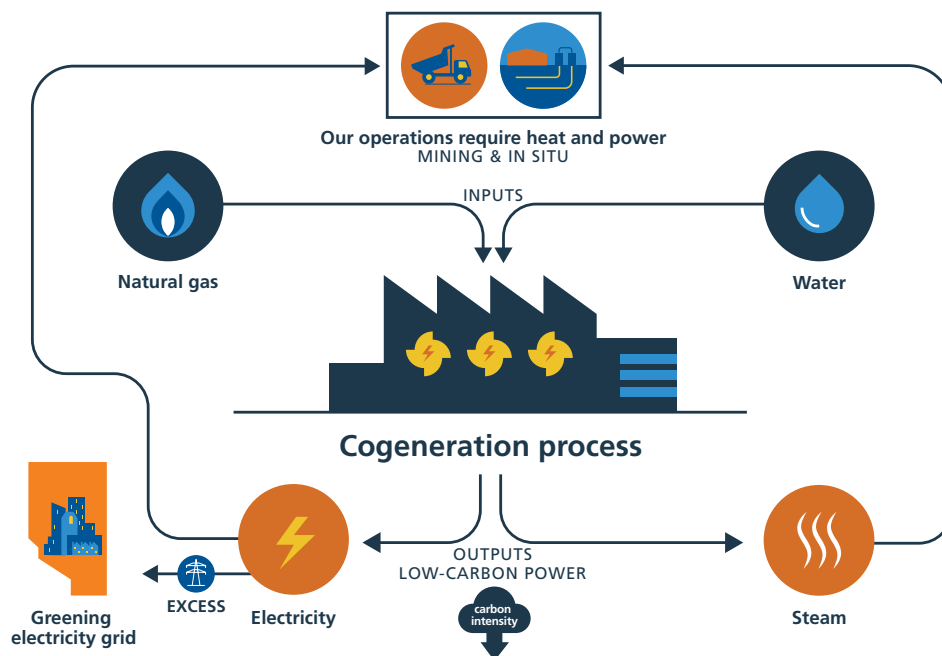
The requirement for steam in crude oil extraction, processing and refining facilities creates the opportunity for high efficiency cogeneration, which provides reliable steam and power to our facilities in addition to supplying surplus power to the electricity grid at a carbon intensity lower than any other hydrocarbon-based generation.

## Cogeneration

For an energy system in transition, cogeneration offers substantial benefits; in addition to providing a reliable, low-cost baseload, low-carbon source of energy, cogeneration power can help to manage the intermittency of renewable power generation sources like wind and solar. Where we have invested in cogeneration, the excess power we generate is reducing the need for coal based power and other less efficient forms of power generation that have higher GHG emissions. Moreover, industrial cogeneration investments produce excess electricity supplied to the grid which creates increased reliability for the public without the capital burden at the expense of the public rate payers.

We currently have cogeneration units installed at our Oil Sands Base Plant, Firebag, and Fort Hills facilities, and we export low-carbon excess electricity generated from these units to the Alberta provincial grid. This synergistic opportunity continues to be a focus area for us producing and exporting more affordable, low-carbon power to the provincial electrical grid.

We plan to replace the coke-fired boilers with cogeneration units at our Oil Sands Base Plant. In addition to providing the facility with steam needed for operations, the cogeneration units may export an additional 800 megawatts (MW) of electricity to the provincial grid, equivalent to roughly 7% of Alberta's current electricity demand, and reduce emissions by approximately 2.5Mt/y, equivalent to displacing 550,000 cars from



### Cogeneration and renewable power capacity

Suncor's combined investments in cogeneration and wind power generation make us one of the largest and most carbon-competitive independent power producers in Alberta by generation capacity. Across our operations, we have working interest in approximately 1,400 MW of renewable and cogeneration capacity and provide approximately 740 MW to regional grids. Sanctioned projects are expected to add another 1,000 MW of capacity.

the road. The project is also expected to reduce GHG emissions intensity at our Oil Sands Base Plant by approximately 25% by replacing coke, a high-carbon fuel source with lower-carbon natural gas. The timeline of this project has been extended by up to two years due to the current market conditions, reminding us that a financially healthy base business is required to enable investments in low-carbon innovation.

We were an early entrant in the renewable power generation business in 2002. Since then, we have developed eight wind projects totaling 395 MW. Today, we are partners in four operational wind power facilities with a generating capacity of 111 MW. In 2019, we sanctioned phase one (200 MW) of the Forty Mile Wind Power Project in Alberta. Similar to the replacement of our coke-fired boilers at Base Plant, this permitted and sanctioned project has also been delayed by up to two years due to current market conditions.

Suncor has a strong portfolio of renewable power development sites across Canada that will further reduce reliance on higher-carbon-intensive grids in regions like Alberta and Saskatchewan.

We will continue to identify and develop low-carbon power generation opportunities that provide synergistic benefits to our base operations. As part of the investment evaluation of these opportunities, we assess economic, environmental and social benefits, including Indigenous partnerships. We also assess the potential for these investments to generate emission credits that can be used to offset the emissions in our operations. An enabling factor will be market design allowing for dynamic interaction between a renewable, but intermittent, power source and baseload sources like cogeneration.

### Downstream low-carbon fuels and new consumer solutions

We are focusing our efforts in the downstream on producing low-carbon fuels, and offering new consumer services and solutions.

Our downstream and marketing business was not immune to the global collapse in demand for liquid fuels caused by the COVID-19 pandemic.

We expect demand to recover as governments lift stay-at-home restrictions and induce economic recovery through stimulus spending.

Long-term gasoline demand is expected to be moderated by efficiency improvements in internal combustion engines, policy actions by various governments, and increased uptake of biofuels, as well as hybrid and electric vehicle penetration rates. Suncor's integrated model that connects our reliable source of crude oil with our refining assets combined with our investments in biofuels technology will allow us to continue to meet the demand for liquid fuels while at the same time reducing carbon intensity.

Governments at all levels in Canada are seeking to diversify transportation fleets to use lower-carbon-intensity fuels and, as a result, the transportation fuelling landscape is expected to change over time. Reducing GHG emissions from the transportation sector is arguably one of the toughest challenges, in that transportation is fundamental to economic productivity.

We believe diesel will remain the predominant fuel in North America for heavy haulage, aviation, marine and rail, and we see demand



## Strategy

growth with increasing economic activity as the world recovers from the COVID-19 pandemic. Heavy-duty vehicle fuel efficiency standards and biodiesel blending are expected to offset some of the economically driven demand growth, and we see value in exploring the potential for renewable diesel production as a result of this shift.

While it remains to be seen whether consumer adoption of alternative energy vehicles will wane in light of sustained low oil prices, we believe hybrid, plug-in hybrid, and electric vehicles will remain cost-effective additions to the passenger vehicle fleet and will, along with fuel efficiency standards, contribute to moderating growth in global gasoline demand. We also believe safety, low-cost, consumer convenience and improvements in carbon intensity mean liquid fuels will remain the primary fuel source in vehicle mobility for many years to come.

Suncor remains committed to providing our customers with multiple low-carbon fuelling choices. In addition to providing fast-charging EV infrastructure, we continue to reduce the emissions intensity of our liquid fuels in several other ways. One way is through biofuel blending.

Suncor owns and operates the largest ethanol plant in Canada, which provides the ethanol we blend into our gasoline. Heavy haul trucks, aviation and marine fuels of the future will require advanced biofuel blending. We are evaluating optimization work at our St. Clair ethanol plant to increase the quality of our products and develop lower-carbon-intensity ethanol. We are also increasing the bio-content of our diesel and gasoline.

Suncor also monitors technologies being developed by other parties to determine if, and when, an investment in the technology could be applied to our business. In 2019, we invested in Enerkem, which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled. We also continue to invest in sustainable fuel technology companies such as LanzaTech and LanzaJet.



## Focusing on our customers

While we continue to reduce the emissions intensity of our liquid fuels, we are evolving and expanding our current product offering to meet growing customer demand. Through our Petro-Canada™ brand, we completed construction in 2019 of Canada's Electric Highway™, a coast-to-coast electric vehicle (EV) fast-charging network spanning more than 50 Petro-Canada™ stations. These sites are positioned no further than 250 kilometres apart and provide universal charging options to a variety of electric vehicles.

We invested in level three direct-current fast chargers, a step-change technology that is built beyond the needs of today's EV technology and positioned for the future of EV charging in Canada. This exciting initiative supports customers wanting to reduce their carbon footprint with choices for their energy needs and enables us to learn more about this emerging market as we continue to evaluate options and respond to evolving customer needs.

™ Trademark of Suncor Energy Inc.

## Scenario planning

Suncor uses three energy futures scenarios to 2050 and is introducing a new 2°C scenario to 2100 to test and assess the resiliency of our business strategy. We consistently develop several distinct, challenging, relevant and plausible world trajectories, adjusting all variables in an internally consistent manner. Some of the aspects we consider in our scenario development include demographics, economics, environment, (geo)politics, legal, social and cultural, and technology.

### Energy future scenarios to 2050

These scenarios<sup>6</sup> are all plausible and could affect our operating environment and business strategy in markedly different ways.

Under each of these scenarios, including the one with the most aggressive decline in oil demand, we believe a substantial amount of oil will be required for decades as the world gets on track to meet its climate ambitions. This view is also supported by forecasts from organizations such as the International Energy Agency and the U.S. Energy Information Administration. Meeting that demand at either low, or highly volatile, oil prices will be a challenge.

These scenarios also confirm the need to continually lower costs and carbon intensity throughout our business. However, as the energy system transitions away from carbon intensive sources of energy, we believe some level of hydrocarbons will continue to be needed for consumer products, transportation, agriculture and industrial uses.

Each scenario has an implied crude oil price range and climate change regulatory impact. Two of the three reflect the current global aspiration toward reducing carbon emissions; what differentiates the scenarios is the context, pace and scale at which that comes about.

Of these scenarios, “Autonomy” is the scenario we consider best represents the technology and policy context that would be essential to meet the aspiration of limiting cumulative emissions to 450 ppm.

The scenarios are used annually by the CEO, the executive leadership team and the Board of Directors to assess business and growth strategy and identify alternative strategic directions. This process continues to be a useful tool for stress-testing our business on several key dimensions, including climate risk.

## Autonomy

Rapid technological and societal change transforms the energy landscape in Autonomy, supported by a peaceful and collaborative world.

- Millennial shift – focus on sustainability and collaboration, sustainable urbanization.
- Falling costs and improved reliability of clean energy allow developing countries to bypass large-scale hydrocarbon-based energy infrastructure.
- Natural gas is a transitional fuel for power generation, but after 2030 increasingly renewable power generation fuels a largely electrified energy system.
- Breakthrough battery technology development supports growth in electric vehicles.
- Oil’s role in geo-politics is substantially diminished contributing to a generally stable geo-political environment. Stable moderately strong economy.
- Carbon-intensive industries face high regulatory costs and requirements.
- No new export pipelines are built out of the Athabasca oil sands region.

### Energy markets impact

- Abundant and cost-effective supply of energy coupled with moderation and eventual decline in demand, particularly in transportation, drives oil prices to stay low in the long term.
- Oil exploration and production slows as investment moves to other sectors, reducing but not choking supply.
- High cost supply falls off fast.
- Oil is still required and continues to provide a significant share of the world’s energy need.

### Expected impact on Suncor

- No existing assets are stranded.
- Existing long-life assets continue to produce, funding their own sustaining capital or modest growth capital requirements for incremental production expansion.
- New oil sands growth projects are challenged and unlikely to proceed.
- Oil sands continue to provide a stable dividend base while growth options in other resource basins are considered.
- Only the top tier refineries remain profitable – Suncor’s Downstream maintains a focus on reliable, efficient and low-cost operations.

<sup>6</sup> These scenarios are substantially based on the IHS Markit Autonomy, Rivalry and Discord scenarios. IHS changed Vertigo to Discord in 2019. The scenario descriptions have been modified by Suncor for applicability to its business.



## Rivalry

In Rivalry, population growth, urbanization and growing middle class drive energy demand – diverse supply is required to satisfy demand, with intense competition for market share between energy sources.

- Improving standard of living and greater personal wealth, particularly in China.
- Expanding use of advanced technologies increases demand for energy.
- Shift of economic power to millennials with the desire and means to address pollution and climate change.
- Geo-political landscape remains tense and strong global economic growth shifts global influence.
- Technology advancements allow access to greater oil reserves, with unconventional supply growing.
- Natural gas and LNG play a larger role in transportation.
- Strong growth in renewable energy.
- Carbon-intensive industries face high regulatory costs and strict standards.

### Energy markets impact

- High global energy demand fed by diverse energy supply.
- Refined products still dominate transportation fuels, but are losing market share to alternative fuels.
- Fuel efficiency standards and technological innovation moderate growth in refined product demand.
- Oil and natural gas are increasingly costly to produce and the oil price continues to trend upwards with some cyclical downturns.

### Expected impact on Suncor

- No existing assets are stranded.
- High price and market access enable robust oil sands growth and further investment in improved extraction techniques.
- Continued focus on carbon footprint reduction through capital projects, technology development and efficient operations.
- Competitive downstream provides robust returns and enables physical integration of oil sands crude.

## Vertigo

Continued conflict and geo-political instability are at the forefront of the world. Vertigo is a world with economic volatility, unbalanced wealth distribution, and overall weaker GDP growth.

- International trend towards isolation and self-preservation with energy security a key concern.
- Air quality, traffic congestion lead to smaller, higher-efficiency vehicles and some electric vehicle adoption.
- Extreme weather events lead to social unrest.
- Investor risk aversion and tight capital markets constrain both technology advancement and high capital projects.
- Pipeline projects constrained by stakeholder protests and investor risk aversion.
- Unstable, boom/bust energy market.
- Environmental progress and climate change mitigation take a back seat to economic concerns.

### Energy markets impact

- Fossil fuels remain the primary source of affordable energy and dominate the global energy mix.
- The price of oil recovers from current levels but fluctuates widely with rapid shifts in demand and supply.
- Slower economic growth and technological progress limit the proliferation of electric and other alternative fuel vehicles; energy mix does not change significantly.
- Slower economic growth limits growth in energy, oil and refined product demand.

### Expected impact on Suncor

- No existing assets are stranded.
- Long-life assets able to deliver free cash flow through commodity price volatility, enabling Suncor to maintain competitive returns to shareholders.
- Integrated model helps smooth oil price cycles.
- Growth projects rigorously tested to ensure ability to deliver returns in volatile oil price environment.
- Financial strength is leveraged to consolidate assets at the bottom of the cycle.

## A new 2°C scenario

In 2019, Suncor developed a new 2°C scenario with IHS Markit<sup>7</sup> in line with our support for both the Task Force on Climate-related Financial Disclosures (TCFD) and the Paris Agreement. This work is informing our long-term business planning and corporate strategy and allows us to understand what a pathway could entail to keep global temperatures from rising 2°C, or less, by 2100 compared with pre-industrial levels.

Developing this scenario pushed us to think critically about the characteristics of a plausible, relevant and consistent view of the future. The process was valuable and provided us with a number of key takeaways including the need for co-ordinated global action on climate change, the power of carbon pricing to incentivize low-carbon technology, and the changing energy mix required to power the world's economies amidst a growing population. Our work to develop this scenario is the beginning of what we expect will be numerous opportunities to engage with stakeholders and other experts to refine it over time.

### Key insights

#### Peak emissions

Our 2°C scenario begins with a period of rising emissions, consistent with the historical trend of increasing energy use and continues until approximately 2030. At this point, a combination of cost and

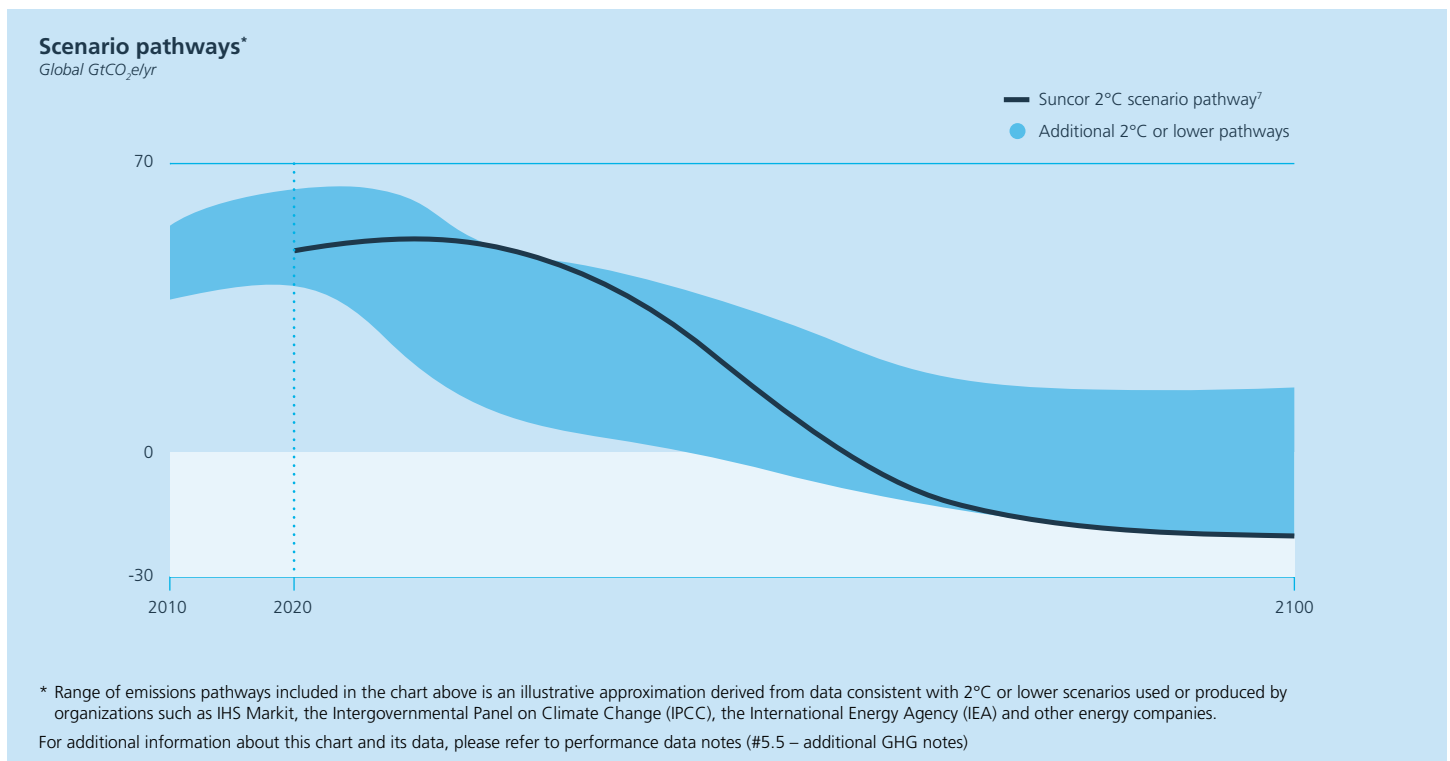
generational pressures, technological innovation, and political unity bring enough of the world together to take dramatic and unified action to change the trajectory of GHG emissions.

This scenario provides a valuable reflection of both the current state of emissions, and continued demand for energy with the economic and technical challenges inherent with reducing emissions from that demand.

This trajectory of rising emissions implies a sharper decline in GHG emissions sometime after co-ordinated and unified action begins. Beyond a decline in GHG emissions, this transition necessitates a significant period of negative emissions in the latter half of the century.

#### Requires co-ordinated and united action

Given the global nature of this challenge, our scenario indicates that an international alliance with a shared 2°C (or lower) ambition, along with transparent collaboration in technology, trade and environmental approaches is essential. By the late 2020s, this scenario envisions an international group of nations taking a co-ordinated approach to pursuing more aggressive climate change action. Government plays an active role pricing carbon to discourage the consumption of high emissions intensity products and rewarding low GHG intensity products. Large organizations, including Suncor, also have a unique role to play in climate change solution scaling and commercialization.



<sup>7</sup> IHS Markit acted as external market consultant for this data and analysis, in 2019. The use of this content was authorized in advance by IHS. Any further use or redistribution of this content is strictly prohibited without written permission by IHS Markit. All rights reserved.

## Strategy

### Broad-based carbon pricing

A price on carbon throughout the economy is required to reduce consumption and incent the adoption and improvement of low-carbon technology. In this scenario, carbon prices are assumed to increase to approximately US\$300 per tonne CO<sub>2</sub> (in real 2018 terms) by 2100 to compensate for the peak emissions period.

In conjunction with carbon pricing, governments encourage market-based solutions within the alliance, including open carbon markets to buy, sell and trade offsets across a vast economy.

### Shifting primary energy mix

Oil plays a continued, albeit diminished role to 2100, while renewables and nuclear power become more prominent post-2050.

In the power sector, the demand for coal faces sustained pressure globally as a result of its relatively high emissions intensity. Renewables continue to gain market share on improved cost profiles, dedicated policy support and the firm capacity offered by improved storage in the form of hydro, batteries, and hydrogen. Nuclear power increases market penetration with lower costs, and new, safer technologies and policies.

In the transportation sector, the world shifts away from oil. Oil demand in the second half of the century transitions to demand for petrochemical feedstock and materials. The decline is most pronounced in the light duty vehicle segment where electrification, biofuel and hydrogen supply opportunities are assumed. The decline is slower in the heavy goods vehicle segment, and hydrogen as a transportation fuel grows as costs come down.

### Emissions reduction

Our 2°C scenario takes a holistic view of emissions including both energy and non-energy sources. Today non-energy emissions represent approximately 25% of total GHG emissions. Aggressive emissions reduction is required in all sectors, and solutions to remove GHGs from the atmosphere are required to reduce the total concentration of CO<sub>2</sub> by 2100.

Although there are challenges with reaching a net negative emissions state, this is seen to be more plausible than not having a peak emissions period in the early years of the scenario. It is in everyone's interests to limit the peak emissions period; higher peak emissions will require more global effort for developing net negative emissions solutions which are currently not feasible without new carbon capture technologies.

### 2°C scenario outcomes

Conducting this 2°C scenario work is informing our collective understanding of actionable steps as we transition to a low-carbon economy, including:

- adjusting our strategy to focus our leadership in areas where we can best support efforts to transition to a low-carbon economy
- developing a new ambition framework to complement our existing GHG intensity reduction goal
- continuing to cultivate an integrated portfolio of low-carbon investments into our base business such as low-carbon fuel and oil, low-carbon power, enhanced consumer engagement, and carbon capture and sequestration
- continuing our participation in early stage investments in innovation, technology and clean energy venture capital funds to reduce GHG emissions.

## Scenario signposts

Along with scenarios, we also develop and annually update our signposts, which are milestones to identify critical shifts in the external context. The world is in a constant state of change, sometimes moving faster than we expect; 2020 being a prime example with the COVID-19 pandemic paired with oil market turmoil. Tracking the pace and direction of the change is an integral part of our scenario work and helps us develop and evaluate strategic alternatives for our business by incorporating both global and Canadian current events, trends and actions.

Signposts include changes in global energy demand and supply mix, political and economic indicators, climate data, policy and consumer trends, and technology advances. Current signposts tell us:

- while energy demand has been negatively impacted by COVID-19, the long-term global energy mix shows signs of demand strength for all forms of energy
- volatility and uncertainty in geopolitical and global economic environments could hinder the growth of the global economy
- technology continues to evolve at a rapid pace, which drives down costs and improves energy efficiencies for producers and consumers alike
- economic priorities and geopolitical tensions appear to impede co-ordination on climate change action
- G20 member countries require further action to achieve their targets consistent with Paris commitments<sup>8</sup>.

8 United Nations Environment Programme (2019). Emissions Gap Report 2019. UNEP, Nairobi.

## Leadership in climate policy

We operate in multiple jurisdictions across Canada and internationally, requiring thoughtful constructive engagement with governments and political parties, Indigenous Peoples, think tanks, universities, and environmental advocacy groups. These efforts help to advance the transition toward a low-carbon economy through the development of smart policies that promote cost and carbon competitiveness.

Good policy instills confidence in the industry, enables continued prosperity to help fund the low-carbon economy transition, and incents investment in technology and innovation that can lower emissions globally. We continue to advocate for environmental policies and regulations that help us address climate change, including supporting a broad-based price on carbon. If applied broadly across the economy to producers and consumers, it can be one of many effective market and regulatory mechanisms to lower GHG emissions while promoting low-carbon innovation.

We demonstrate our commitment to support fair, effective, practical and cost-efficient policy design by contributing to:

- The development of national low-carbon policies such as:
  - Pan-Canadian Framework on Clean Growth and Climate Change
  - Clean Fuels Standard (CFS) in Canada
  - Greenhouse Gas Pollution Pricing Act (GGPPA) which encompasses the development of the consumer fuel tax and the industrial output-based pricing system and associated emissions trading program
  - Net-zero by 2050 and Just Transition legislation, both under development.

- The development of provincial low-carbon policies such as:
  - Alberta’s Technology Innovation and Emissions Reduction Regulation
  - Quebec’s cap-and-trade program and Energy Transition Action Plan
  - Ontario’s Emission Performance Standard and renewable fuel regulations
  - British Columbia’s CleanBC Climate Action Plan and Renewable & Low Carbon Fuel Requirements Regulation
  - Design of fair, efficient and openly competitive electricity policies.

We also support several climate initiatives and participate in critical global energy discussions, including:

- the [Canadian Institute for Climate Choices](#), which assists government decision-making through rigorous research and analysis, broad engagement with experts, industry, and other key stakeholders
- the World Bank Carbon Pricing Leadership Coalition (CPLC), a voluntary initiative that aspires to catalyze action toward the successful implementation of global carbon pricing
- the World Economic Forum and the United Nations Climate Change Conference of Parties (COP).



## Carbon policy and impacts on Suncor

Since the 2016 ratification of the Paris Agreement, the focus of governments globally is on the technology pathways and policy frameworks required to achieve a stable and responsible transition to a low-carbon energy system while continuing to meet rising global demand for energy. We operate in many jurisdictions that regulate, or have proposed to regulate, industrial GHG emissions. Currently, 100% of our Scope 1 and 2 GHG emissions from assets and facilities we operate are in regions implementing various forms of carbon pricing mechanisms and/or GHG reduction targets.

We remain supportive of broad-based carbon pricing capable of achieving sustainability and energy security objectives. It is also important that policies are designed to avoid the potential for carbon and investment leakage by mitigating competitiveness impacts on trade-exposed sectors while continuing to accelerate emissions performance improvements.

Additional information about environmental regulations and initiatives related to climate change and GHG emissions relevant to our business is available in our 2019 Annual Information Form. The following is a summary of the direct impacts that carbon policies have on Suncor's operations.

### Canadian federal government

The federal *Pan-Canadian Framework on Clean Growth and Climate Change* (PCF)

- Requires all provinces and territories to implement a carbon price starting at \$20 per tonne of CO<sub>2</sub>e in 2019, rising to \$50 per tonne in 2022.
- Jurisdictions can implement an explicit price-based system, a carbon levy and performance-based system, or a cap-and-trade system. Within these programs, provinces have discretion to manage competitiveness of their energy-intensive, trade-exposed industries.

*The Greenhouse Gas Pollution Pricing Act* (GGPPA)

- Serves as a regulatory carbon pricing backstop to the PCF for jurisdictions that request it or have not otherwise implemented a compliant carbon-pricing regime.
- Consists of an economy-wide consumer carbon levy on the use and combustion of fossil fuels and a regulatory emissions trading system known as an output-based pricing system (OBPS). The OBPS is applied to heavy industrial sectors and is partially adjusted to mitigate the competitiveness impacts on trade-exposed sectors like oil and gas. It imposes limits on emissions, a "credit" for entities that operate below their limit, and a "charge" for those who exceed it.

*Clean Fuel Standard (under development)*

- Objective of achieving annual CO<sub>2</sub>e emissions reductions of 30 megatonnes (Mt) by 2030 and is expected to be finalized and enacted 2022-2023.

9 Emissions from the production of power through cogeneration are excluded from this limit, as is an incremental 10 Mt of upgrading capacity.

### Alberta

A regulated carbon price applicable to large industrial sectors has been in effect since 2007, and as of 2020 under the new provincial *Technology Innovation and Emissions Reduction Implementation Act* (TIER) our Oil Sands Base Plant, Fort Hills, Firebag, MacKay River, and Edmonton refinery assets are subject to a carbon price of \$30 per tonne. Starting in 2020, these facilities are also required to reduce emissions by 10% and an additional 1% per year thereafter or assessed at the prevailing carbon price.

Compliance costs in 2018 and 2019 under the previous *Carbon Competitive Incentive Regulation* were \$47 million and \$83 million.

The *Oil Sands Emissions Limit Act* includes a precedent-setting 100 Mt emissions limit<sup>9</sup> by 2030 on oil sands development. As a limit on emissions, rather than production, it allows production to grow as long as the total emissions of the sector remain under the limit. The emissions limit is expected to encourage the innovation required to reduce both carbon and cost in the oil sands industry.

As of Jan. 1, 2020, the federal government partially imposed their federal carbon pollution pricing system under the GGPPA where the federal economy-wide consumer carbon levy is applied on the use and combustion of fossil fuels in Alberta.

### Ontario

As a result of withdrawing its participation in the Western Climate Initiative's cap-and-trade program (WCI) with California and Quebec in 2018, Ontario became subject to the two-part federal government GGPPA program in 2019. Suncor's Sarnia refinery and St. Clair ethanol plant are both regulated facilities under the federal OBPS. In 2019, under the OBPS, the Sarnia refinery qualified for emissions credits of \$430,000, and the St. Clair ethanol plant's compliance cost was \$750,000.

Suncor continues to work with the provincial government as it explores a proposed [Emissions Performance Standards](#) carbon pricing system for large emitters. The federal government's GGPPA, however, may be in place until provincial and territorial programs are reviewed in 2022.

### Newfoundland and Labrador

Performance standards for large industrial facilities in Newfoundland and Labrador are legislated under the *Management of Greenhouse Gas Act* (MGGA) and associated regulations. Applicable to facilities that emit more than 25,000 tonnes of GHG's per year, the MGGA's carbon price is consistent with the federal scheme for 2019 at \$20 per tonne of CO<sub>2</sub>e increasing to \$30 per tonne in 2020.

## Strategy

Regulated facilities are assigned a GHG reduction target of 6% below their 2016 to 2017 historical average emissions-to-output ratio for 2019. The reduction target rises to 10% below its 2016 to 2018 historical average for 2020, then 10% below in 2021 and 12% below in 2020 and subsequent years. Fixed process emissions are excluded and for offshore petroleum facilities, the MGGA further excludes both methane from venting and fugitive emissions because they are already federally regulated. The 2019 compliance obligation for our operated Terra Nova asset was \$2.3 million.

### Quebec

Suncor's Montreal refinery in Quebec is regulated under a cap-and-trade program linked to the WCI. Regulated refining facilities receive an allowance allocation that aligns with a performance benchmark accounting for competitiveness and trade exposure. In 2019, our Montreal refinery's cost of compliance for stationary emissions was \$2 million. Fuel suppliers are also required to purchase allowances to cover the tailpipe emissions of all fuel sold, the cost of which is expected to be largely passed-on to the consumer, thus acting as a carbon price akin to an additional tax on fuel consumption.

### Transportation fuels policies in Canada

Transportation emissions account for approximately 25% of total emissions in Canada<sup>10</sup>. Jurisdictions across the country are considering policy mandates and incentives for alternative fuels, as well as major public transit and urban planning initiatives intended to reduce the carbon intensity of transportation.

British Columbia's *Renewable and Low-Carbon Fuel Requirement Regulation* requires fuel suppliers to meet a provincial fuel pool carbon-intensity target through blending incremental renewable fuel or investing in alternative fuels infrastructure. Federal and provincial renewable fuel standards mandate blending of ethanol into gasoline and blending biodiesel into diesel. Under these standards, fuel suppliers like Suncor incur a cost to acquire and blend the incremental renewable fuels, which is largely passed on to the consumer.

In addition, the federal government has recently proposed implementing a national Clean Fuels Standard (CFS), applicable to liquid, gaseous and solid fuels used in Canada. Rather than increasing the federal carbon price, the CFS will compel producers, distributors and importers to increase the use of lower-carbon fuels, energy sources, and technologies. It is intended to be complementary and additional to other climate policies such as the federal carbon levy rising to \$50/t in 2022. It is expected that the CFS will ultimately result in additional costs being passed on to Canadian consumers.

<sup>10</sup> <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html>

<sup>11</sup> These figures reflect our best understanding of carbon emissions regulations, policy impacts and production forecasts at the time of publication, many of which are in flux with a high degree of uncertainty. Upstream includes Oil Sands and Exploration & Production segments. Downstream includes Refining and Logistics and biofuels production, excluding distribution.

### U.S. GHG regulations

The U.S. Environmental Protection Agency (U.S. EPA) mandates that all large facilities (facilities emitting greater than 25,000 tonnes of CO<sub>2</sub>e per year, including Suncor's refinery in Commerce City, Colo.) must report their GHG emissions. The mandate of the U.S. EPA is under review by the current administration. In 2019, Colorado passed a suite of energy- and climate-related legislation including state-wide GHG reduction targets for 2025, 2030 and 2050. The legislation also includes rules to reduce emissions from the oil and gas sector and to transition Colorado's electricity system to become 80% renewable by 2030, and 100% renewable by 2040.

Suncor continues to monitor these developments. The outcome of these changes in approach to GHG emissions is currently unclear and the impact on Suncor, including its Commerce City refinery, is unknown at the time of publication.

### Impact of climate change regulations

Our 2020 carbon price outlook applies provincial and federal carbon regimes within Canada and a price of \$30 per tonne of CO<sub>2</sub>e, assuming a steady increase to approximately \$100 per tonne on an increasing percentage of our emissions by 2040. As most of our facilities are regulated under various carbon-pricing regimes, the impact of our outlook is built into our planning assumptions.

New this year, we've evaluated the outlook and cost impacts for emerging and evolving emissions regulations and how they apply to GHG emissions (scope 1 and 2), from the working interests in both our upstream and downstream assets. An improvement upon previous disclosures, these estimates more accurately reflect the integrated nature of our business. The after-tax cost per barrel of our upstream net production over the next ten years is estimated at an average of \$0.33 cents per barrel. The estimated average after-tax cost per barrel of our downstream saleable yield over this same period is \$0.13 cents per barrel<sup>11</sup>

# Metrics and targets

## GHG emissions and energy use

### 2019 GHG performance<sup>12</sup>

Through Suncor's culture of operational excellence, we focus on safe, reliable and energy-efficient operations.

In 2019, Suncor's company-wide absolute GHG emissions were 23 million tonnes of CO<sub>2</sub>e. 2019 was also the first full year of operations for the Fort Hills facility, although this asset operated at lower-than-optimal utilization due to the Government of Alberta mandatory production curtailment<sup>13</sup>.

While both the total emissions and production increased approximately 4% year-over-year, the lower GHG emissions intensity associated with the paraffinic froth treatment (PFT) extraction process at Fort Hills helped to maintain the corporate emissions intensity flat compared to 2018, at 62 kilograms (kg) of CO<sub>2</sub>e per barrel (bbl) of oil equivalent production.

The GHG performance in our other upstream oil sands operations was slightly higher than their three-year average. These variations are attributed to a combination of factors such as curtailment, a longer-than-usual outage event at MacKay River which disproportionately affected production in 2019, and higher steam-to-oil ratio (SOR) at the Firebag facility.

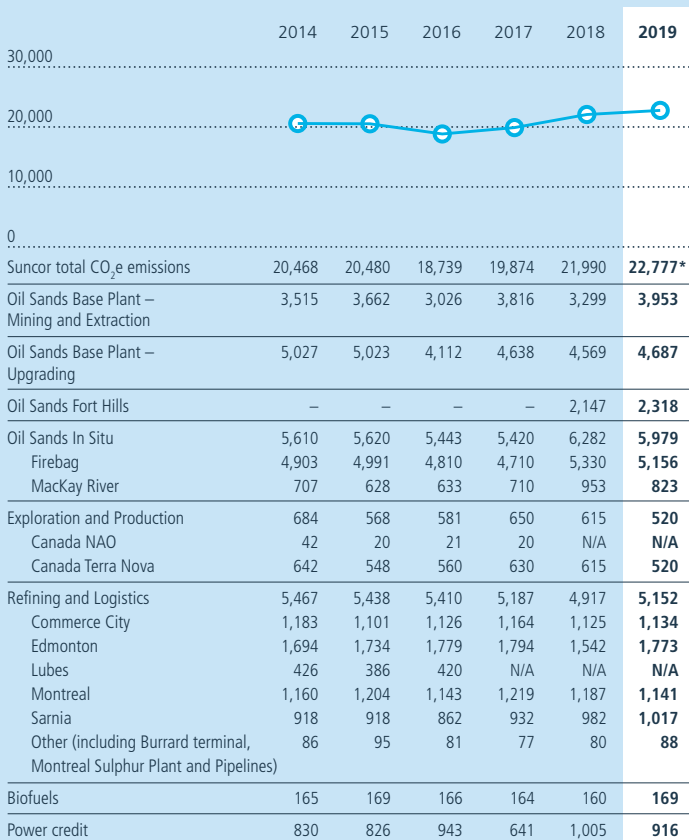
The emissions intensity of our downstream Refining and Logistics facilities remained relatively flat in 2019, driven by maintained energy efficiency improvement initiatives and optimized refinery utilization rates.

GHG emissions are closely linked to energy use, with approximately 90% of direct GHG emissions and nearly all indirect emissions accounted for by consumption of energy for operations.

Suncor is committed to continuously improving energy management and reducing GHG emissions as part of everyday operational excellence. Similar to the GHG trends, energy use slightly increased in 2019 with the addition of Fort Hills but total intensity remained relatively flat.

### Suncor-wide absolute GHG emissions

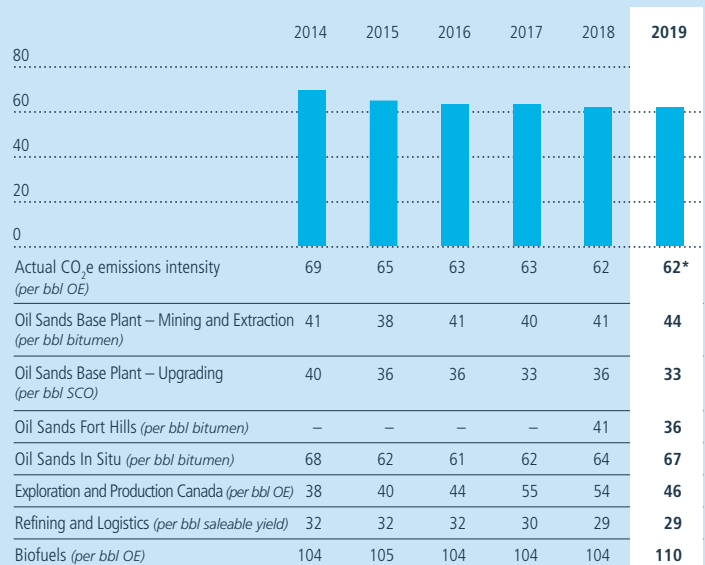
thousand tonnes CO<sub>2</sub>e equivalents (CO<sub>2</sub>e)



\* Our total GHG emissions and total GHG emissions intensity figures have been reviewed and assured by Ernst & Young LLP.

### Suncor-wide GHG emissions intensity

kg CO<sub>2</sub>e / barrel (bbl) of saleable product



Absolute CO<sub>2</sub>e emissions represents the total Scope 1 and 2 emissions with no credit taken for low-carbon power production. The power credit above is calculated using the cogeneration power exported to the Alberta grid and the intensity in which this power was generated. It is included in determining the GHG emissions intensities.

The Suncor-total intensity calculation incorporates net facility production, minus internal transfers, resulting in a production value reflective of our product sales to market.

Our Oil Sands Base Plant operations reflect integration between mining activity that recovers oil sands bitumen, and upgrading portions of this mined oil sands bitumen along with some in situ production. The upgrader's end product is refinery-ready synthetic crude oil (SCO).

Converting corn into fuel is more energy intensive than turning hydrocarbons into fuel. We are evaluating optimization work at our St. Clair facility to develop lower carbon intensity ethanol. The GHG benefit of biofuels is that the carbon emitted during end-use combustion came from plants that recently captured CO<sub>2</sub> from the atmosphere. Its combustion is considered net neutral with regards to carbon emissions.

For additional information about this chart and its data please refer to the performance data notes 3, 4 and 5

<sup>12</sup> All GHG performance values reflect Suncor-operated facilities only and represent 100% of the direct and indirect emissions at these facilities. Data is not broken down by working interest and does not include non-operated facilities.

<sup>13</sup> <https://www.alberta.ca/oil-production-limit.aspx>

# Performance highlights

## Oil Sands Base Plant

Despite the Government of Alberta mandatory production curtailments, 2019 production increased 12% due to major maintenance turnaround events at the upgrader in 2018. As a result, absolute emissions from operations increased 10% from 7.9 million tonnes of CO<sub>2</sub>e in 2018 to 8.6 million tonnes of CO<sub>2</sub>e in 2019. Emissions intensity decreased slightly, to 72 kg of CO<sub>2</sub>e per bbl of oil equivalent, largely due to increased production.

## Fort Hills mining

2019 represented the first full year of operations at Fort Hills, resulting in 26% higher production compared to 2018. This asset was disproportionately impacted by the mandatory curtailment and was not able to operate at full rates throughout 2019. Despite operating at higher production rates than 2018, absolute emissions only increased 8%, with the facility accounting for 2.3 million tonnes of CO<sub>2</sub>e compared to 2.1 million tonnes of CO<sub>2</sub>e in 2018. This is because the facility was not operating as efficiently during ramp-up in 2018.

The less energy- and carbon-intensive extraction process used at Fort Hills removes heavy hydrocarbon molecules to create a lighter, higher-quality bitumen requiring less diluent for shipping. As a result, the 2019 GHG intensity of production decreased by 13% to 36 kg of CO<sub>2</sub>e per bbl of oil equivalent and full life cycle (well-to-wheels) emissions intensity was similar to the average refined barrel in the U.S.<sup>14</sup>

## In Situ

The absolute emissions at our steam assisted gravity drainage (SAGD) operations decreased 5% year over year to about 6.0 million tonnes of CO<sub>2</sub>e, due to the Government of Alberta-mandated production curtailment that more significantly impacted the Firebag asset. Suncor's In Situ facility intensity was 5% higher compared to the previous year, at 67 kg of CO<sub>2</sub>e per bbl of oil equivalent in 2019. The intensity increase was due to curtailment and a higher steam-oil-ratio at Firebag in 2019, and an extended outage at the MacKay River facility.

## Exploration and Production

On the East Coast of Canada, Terra Nova emissions decreased 15% to 0.5 million tonnes CO<sub>2</sub>e in 2019. The 2019 emissions intensity decreased by 15% as well, from 54 kg of CO<sub>2</sub>e per bbl of oil equivalent to 46 kg of CO<sub>2</sub>e per bbl of oil equivalent. The reduction of emissions was due to a significant decrease in flaring in 2019. Terra Nova is the only East Coast Canada asset that Suncor operates. Other international and offshore production interests are joint ventures and not within our direct operational control.

## Refining and Logistics

Total GHG emissions at our downstream facilities increased 5% to 5.2 million tonnes of CO<sub>2</sub>e. Performance in 2019 was comparable to 2017, as there were various turnarounds and shutdowns at refineries in 2018. Emissions intensity held relatively steady compared to 2018, at 29 kg of CO<sub>2</sub>e per bbl of oil equivalent, which is approximately 6% lower than the 2015-2017 average intensity.

## Low-carbon power and low-carbon fuels

We are currently a partner in four operational wind power facilities with a generating capacity of 111 megawatts (MW), enough to power about 52,000 Canadian homes. In 2019, the Adelaide wind power facility in Ontario that we operate, in partnership with Aamjiwnaang First Nation, generated approximately 98,500 MWh of electricity. Performance data reflects operated wind farms only and is not adjusted to reflect ownership share.

We've been blending ethanol in our retail fuels since 1992 and our St. Clair ethanol plant is the single largest ethanol production facility in Canada. There were no notable changes in plant performance in 2019. Absolute emissions were 0.169 million tonnes CO<sub>2</sub> and emissions intensity was 110 kg of CO<sub>2</sub>e per bbl of oil equivalent. Converting corn into fuel is more energy intensive than turning hydrocarbons into fuel, and we are evaluating optimization work at our St. Clair facility to develop lower carbon intensity ethanol. The GHG benefit of biofuels is that the carbon emitted during end-use combustion came from plants that recently captured CO<sub>2</sub> from the atmosphere. Its combustion is considered net neutral with regards to carbon emissions.

Cogeneration produces low-carbon-intensity power along with industrial steam, and we operate units at our Oil Sands Base Plant, Firebag, and Fort Hills facilities. Our owned and operated cogeneration power production at these sites was approximately 6.5 million MWh in 2019, with about half in excess and exported to the provincial grid. Suncor's cogeneration units produce power at a GHG intensity at less than half of the current Alberta grid.

<sup>14</sup> IHS Energy Special Report: Comparing GHG intensity of the Oil Sands and the Average US Crude Oil. May 2014.



**Metrics and targets**

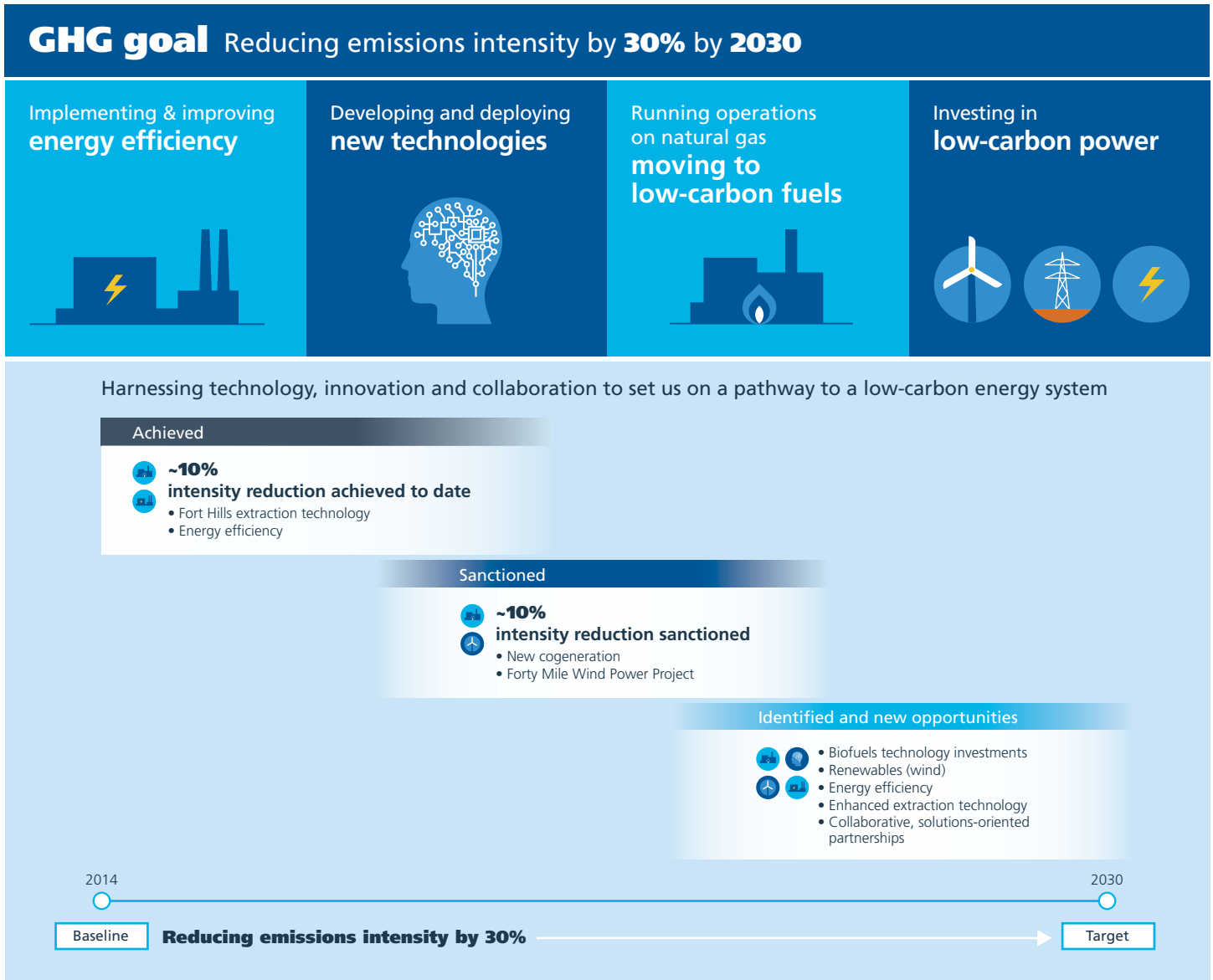
**Integrating our GHG performance goal**

Our GHG goal is intended to embed low-carbon thinking into the day-to-day activities and decisions of our employees and challenge us to harness technology and innovation necessary for transformational solutions. Our progress will be measured by reducing the total emissions intensity of the production of our oil and petroleum products by 30% by 2030, from a baseline year of 2014<sup>15</sup>.

This ambitious goal stretches us beyond our current technology, and ultimately aims to alter the trajectory of our absolute emissions while still allowing us to grow, with the intent to make us a producer of low-carbon intensity crude, refined products and other sources of energy.

While we've made progress since establishing our goal in 2016, we realize the scale of the challenge globally to pursue a low-carbon future.

Over the next decade, our goal will be driving operational, energy and fuel efficiency improvements, accelerating the development and implementation of new technologies, and encouraging the evaluation of potential low-carbon business opportunities. The figure below reflects progress in reducing operational intensity up to 2020 and our current analysis of the contributions from several potential emissions reduction focus areas in helping to achieve our goal. We will continue to work to close the gap in our goal progress over the next decade, realizing the need to continue seeking opportunities to collaborate with solutions-oriented partners in reducing emissions in the energy system.



<sup>15</sup> We expect there to be impacts to our GHG intensity due to government mandated production curtailment and COVID-19 impact on demand.

## Metrics and targets

### We are targeting emissions reductions in four key areas

#### Energy efficiency and continuous improvement

We continue to drive energy efficiency at all our facilities, including:



- implementation of new digital technologies such as advanced process control at Firebag, which through digital optimization can maximize steam generation, use this steam more efficiently, and increase oil production through optimized reservoir management
- development and roll-out of energy/GHG key performance indicators (KPIs) at our upstream sites to continue to develop an energy management mindset within Operations
- leveraging operational experience in the design of new facilities to significantly lower energy intensity
- use of extraction technology at Fort Hills that removed heavy hydrocarbon molecules at the source, and a facility design leveraging high-efficiency cogeneration, recovery of warm process water, and closed-loop cooling for enhanced process heat capture.

#### Developing and deploying new technologies

Our goal pushes us to go beyond today's capabilities, and we are aggressively working on new technologies that lower the costs and carbon emissions of our processes and products.



We invested \$830 million in technology development and deployment and digital technologies in 2019 as part of a robust strategy to optimize current assets and develop next-generation facilities. Emissions-related technology development was approximately 50% of the technology development spend including solvents, upgrading technologies and biofuels. Out of the \$830 million invested, this reflects:

- \$224M technology development spend (includes COSIA, Syncrude R&D and direct strategic investments such as Evok, Emerald, ArcTern Ventures, Enerkem, LanzaTech)
- \$250M on technology deployment spend on permanent aquatic storage structure (PASS), our demonstration pit lake called Lake Miwasin, autonomous haul systems (AHS) and other smaller deployments
- \$356M digital transformation

#### Investing in low-carbon power

Our GHG goal is also driving us to seek and evaluate new business opportunities in our value chain and within the evolving energy system.



- All our oil sands facilities use cogeneration, and we are a net exporter of power to Alberta's electricity grid. By producing both industrial steam and electricity through a natural gas-fuelled process, cogeneration is the most energy-efficient form of hydrocarbon-based power generation. The GHG intensity of the power produced from our cogeneration units is approximately 75% below that of an average coal-fired power plant and 30% below a combined-cycle natural gas facility. Excess power from our cogeneration facilities and our wind energy significantly contribute to reducing the overall GHG intensity of Alberta's electricity grid.
- We have sanctioned a project to replace the GHG-intensive coke-fired boilers with a natural gas-fired cogeneration facility at our Oil Sands Base Plant. In addition to providing the facility with steam and hot water needed for our operations, the cogeneration facility is expected to export up to 800 MW of low GHG-intensity electricity to the provincial grid in Alberta<sup>16</sup>.
- In addition to our current partnerships in wind power, in 2019, we sanctioned phase one (200 MW) of the Forty Mile Wind Power Project in Alberta. We continue to evaluate renewable energy investments that deliver economic, environmental and social benefits.

#### Moving to low-carbon fuels

We continue to look for synergistic low-carbon opportunities in our operations and evaluate new business opportunities in sustainable fuels.



- In addition to providing low-carbon power, our sanctioned boiler replacement project at Base Plant will replace coke combustion with lower carbon intensity natural gas.
- We continue investing in renewable fuels including our 2019 investment in Enerkem which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled.
- We are evaluating optimization work at our St. Clair ethanol plant to increase the quality of our products to develop lower-carbon-intensity ethanol.
- We also continue to invest in sustainable fuel technology companies such as LanzaTech and LanzaJet.

<sup>16</sup> This project has been sanctioned.

### Goal methodology

Suncor's GHG goal is intended to improve decision-making, and our methodology is specifically designed to encourage business choices that will reduce emissions in the global energy system. To support this change, we have established principles that guide the implementation of the goal. The goal should:

- Drive real emissions reductions in the energy system both within and external to Suncor's operations.
- Encourage new, lower-intensity production as part of our evaluation of new projects. Embedding the GHG goal and carbon price assumptions within our asset development execution model enables a rigorous process to promote the selection of efficient assets and technology for any new oil sands, offshore, downstream and renewable projects.

We rely on the following criteria to measure progress against our goal:

#### Tracking the GHG intensity of our production within the facilities we operate

Our goal focuses on the assets we control and operate. The baseline GHG emissions intensity of our operated assets therefore includes the direct (Scope 1) and indirect (Scope 2) emissions of our facilities. We can then identify opportunities to reduce emissions directly in our

operations and indirectly within the energy system for the products we produce. We also continue to promote safe and efficient production in our non-operated assets.

#### Capturing indirect credits for the actions and/or investments that reduce emissions outside our operational fence lines

Indirect emissions are not directly attributed to our operations but are required to produce our products and include the electricity, hydrogen, or steam that we import from third-party suppliers. In addition to this, our low-carbon products can help reduce indirect emissions within the energy system. For example, the cogeneration power we transmit to Alberta's electricity grid displaces high-carbon sources of power.

#### Adjusting the goal to account for changes in asset mix

To drive emissions reductions to meet our goal, we adjust our baseline to account for change of product sales mix, asset acquisitions or divestitures. For example, reducing the sales volume of premium synthetic crude could reduce Suncor's direct emissions but would simply shift emissions downstream and not result in emissions reduction overall. Similarly, buying low-carbon- or selling high-carbon-intensity assets simply transfers ownership and does not reduce global atmospheric emissions. If we change our product mix or portfolio of assets, we adjust our goal baseline so that these transactions do not benefit or hinder our ability to meet our goal.



# Low-carbon innovation

In today's complex and rapidly changing world, it will take new technologies and innovative thinking to further reduce our environmental footprint.

## GHG: Technology development & deployment

	Discover	Design	Develop	Deploy
<b>Improve carbon intensity of Suncor's base business</b>	<ul style="list-style-type: none"> <li>Technology collaborations*                             <ul style="list-style-type: none"> <li>– COSIA</li> <li>– CRIN</li> <li>– Evok Innovations</li> <li>– ArcTern Ventures</li> <li>– Academic and research institutions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Novel subsurface geotechnologies</li> <li>High temperature reverse osmosis produced water treatment</li> </ul>	<ul style="list-style-type: none"> <li>NRG COSIA Carbon XPRIZE</li> <li>Solvent+</li> <li>Non aqueous extraction</li> <li>Partial upgrading</li> </ul> <p><b>Alternative upgrading</b></p> <ul style="list-style-type: none"> <li>Integrated thermal processing</li> </ul>	<ul style="list-style-type: none"> <li>ES-SAGD (Expanding solvent – steam assisted gravity drainage)</li> <li>Paraffinic froth treatment</li> </ul> <p><b>Alternative upgrading</b></p> <ul style="list-style-type: none"> <li>Slurry phase hydrocracking</li> </ul>
<b>New low-carbon energy ventures</b>	<ul style="list-style-type: none"> <li>Low-carbon energy generation opportunities</li> <li>Bitumen beyond combustion and new products</li> </ul>	<ul style="list-style-type: none"> <li>Natural gas decarbonization</li> </ul>	<p><b>Sustainable liquid fuels</b></p> <ul style="list-style-type: none"> <li>LanzaTech and LanzaJet</li> <li>Low-carbon ethanol production</li> </ul>	<p><b>Sustainable liquid fuels</b></p> <ul style="list-style-type: none"> <li>Municipal solid waste to ethanol (Enerkem)</li> </ul>

Available for commercial implementation    Operational    0-3 Years    4-6 Years    7-10 Years

Examples provided for illustration from the Suncor technology portfolio. Additional information is available at [sustainability.suncor.com/innovation](https://sustainability.suncor.com/innovation)

\* Our technology collaboration efforts span across various stages of technology development and deployment. Information about our collaboration and partnership efforts to advance innovation are provided throughout this report.

Our approach to innovation includes not only technological innovations to change our methods and processes of extraction and production but it also includes an innovative mindset to work with and learn from others.

In some instances, the development and deployment of the technologies we're pursuing will take us beyond 2030.

## Low-carbon mining technologies

We are developing technologies that will allow us to produce crude oil from our oil sands projects at a supply cost and with an environmental footprint (production through refining and consumption) at or below that of conventional oil. This could be achieved in part through the selective decarbonization of our oil sands products.

### Paraffinic froth treatment

Fort Hills uses paraffinic froth treatment (PFT) for secondary extraction. This process selectively removes the low value, heavy fraction of the mined bitumen and produces a lighter, higher-quality bitumen that requires less diluent to transport and requires no additional upgrading

before the downstream processing. The oil sands are the only place in the world that alters the carbon content of oil at the production source before sending it to the market.

As a result of this partial decarbonization process, our greenhouse gas emissions for the average barrel extracted at Fort Hills are similar to the average crude refined in the United States<sup>17</sup> on a full life cycle basis.

### Non-aqueous extraction

Through partnerships with equipment suppliers and research organizations, we are pursuing new technologies to reduce the need for water in bitumen extraction from mining operations. Currently, warm water is used to separate bitumen from the sands. By replacing that water with an alternative solvent, we have the potential to significantly reduce tailings, costs, and our GHG emissions. We have progressed early engineering of the field demonstration unit and technology work continues with a number of partners to advance the technology. We are working with COANDA Research and Development, Innotech Alberta, CanmetEnergy, Devon, and Exergy Solutions, as well as several academic institutions.

17 IHS Energy Special Report: Comparing GHG Intensity of the Oil Sands and the Average US Crude Oil. May 2014.

## Low-carbon in situ technologies

Our current technology for in situ production, steam assisted gravity drainage (SAGD), employs two parallel horizontal wells to recover the bitumen. The top well distributes steam to heat the reservoir, allowing the bitumen to flow to the lower well where it can be pumped to the surface. One of the challenges of SAGD is that it is energy intensive because the reservoir is typically heated to 200°C or more to get the bitumen to flow, consuming a significant amount of natural gas, and necessitating large amounts of water handling and treatment for steam production.

We are advancing a portfolio of in situ technologies to lower the carbon intensity of producing bitumen and improve cost competitiveness for existing processes and for future assets. This means considering how to reduce steam as the dominant process and if successful, would significantly reduce our upstream GHG emissions intensity. We believe the solution will include a hybrid of the technologies we're progressing with the aim to reduce energy and water use, lower capital and operating costs, and improve production rates and resource recovery.

### Solvents

To reduce GHG emissions, we are focused on hydrocarbon solvents as an alternative to steam for bitumen production from in situ reservoirs. Our current focus on solvent recovery processes builds on our experience and background knowledge of solvent-dominated processes, gained from participation in pilots and testing for more than 20 years.

In the solvent-based processes Suncor is pursuing, a light hydrocarbon solvent such as propane or butane is used as the primary means to mobilize the bitumen. We are beginning to pilot a suite of technologies referred to as Solvent+, where the "+" refers to a range of heating technologies that can be coupled with solvent injection. These include wellbore heating, superheated solvent injection, electromagnetic-assisted solvent extraction (EASE) and Enhanced Solvent Extraction Incorporating Electromagnetic Heating (ESEIEH®). If successful, Solvent+ offers the potential for several significant environmental improvements over SAGD including reducing upstream GHG emissions intensity by 50 to 70%.

### ES-SAGD

Expanding Solvent SAGD (ES-SAGD) is an enhancement of SAGD technology wherein a small volume of hydrocarbon solvent is co-injected with steam. The addition of the hydrocarbon solvent is expected to accelerate bitumen production and reduce steam requirements, process water requirements and greenhouse gas emissions. An important component of our evaluation of this technology is enhancing our understanding of solvent retention and recovery.

In 2020, we completed the solvent injection period of the pad-scale demonstration at Firebag and we're now in the monitoring phase post injection, including solvent recovery. We continue to evaluate opportunities to optimize solvent recovery. The estimated emissions intensity reduction on a full well life cycle basis is 5 to 10%. We have regulatory approval for ES-SAGD to deploy on future commercial pads.



## Low-carbon upgrading technologies

We process crude oil into high-quality refined products consumers require. We continue to look for opportunities to minimize the environmental impact that results from the extraction and production of oil, and manufacturing and distribution of fuels.

### Partial upgrading

We are advancing technology development to partially upgrade bitumen, which would increase value by decreasing the cost to upgrade and reducing the amount of diluent required to transport this new bitumen product, and lower greenhouse gas (GHG) intensity from extraction to the end user. The technology when realized could also integrate with existing Suncor infrastructure.

We are progressing research at the Western Research Institute in Laramie, Wyo., where we are using the pilot facility for our partial upgrading development work in 2020 and 2021.

ESEIEH® is a registered trademark of L3Harris Technologies Inc. in the US, Canada, and other countries.

## Low-carbon innovation in renewable liquid fuels

Since 2006, Suncor has been making a significant impact in Canada's emerging biofuels industry. Our ethanol plant provides the ethanol that we blend into our gasoline and we continue to research lower-carbon-intensity ethanol.

We are advancing an active portfolio of projects with universities and companies aimed at developing pathways to produce advanced biofuels from waste, forestry and agricultural excess biomass, and refinery gases. These biofuels have the potential to significantly reduce GHG emissions. Examples of our actions in this area include:

- participating in the Alberta-Based Biorefinery (AB-Bio) project with Alberta Innovates to de-risk sustainable Alberta-based feedstocks to produce low-carbon fuels
- increasing renewable fuel options for our diesel and gasoline blending, including investment in hydrotreated renewable diesel (HRD) and fatty acid methyl ester (FAME)
- investing in companies advancing clean and renewable fuel production capacity.

### LanzaTech

LanzaTech's carbon recycling platform uses novel gas fermentation technology to capture CO-rich gases and convert the carbon to fuels and chemicals. For over 10 years, Suncor has partnered with LanzaTech to support the development of their patented technology portfolio for potential deployment within our existing operations as well as next-generation biofuel plants.

### LanzaJet

LanzaJet will produce sustainable aviation fuel from ethanol derived from a variety of sustainable sources, including wastes and residues. As a founding investor alongside Mitsui & Co., Ltd. and LanzaTech, Suncor's participation will enable the construction of a biorefinery at the Freedom Pines site in Soperton, Ga., and accelerate global commercial access to new sustainable fuels for the aviation sector as it seeks to decarbonize.

### Enerkem

In 2019 we invested in Enerkem, which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled. In addition to a financial investment, a number of Suncor employees have been seconded to Enerkem's facility in Edmonton.

### Low-carbon intensity ethanol

Working with Alberta-based forestry resources, Emissions Reductions Alberta and LanzaTech, we are advancing a pilot scale production of ethanol at a low-carbon intensity. The pilot project converts woody biomass into renewable ethanol through the gasification of the biomass into syngas, and then the fermentation of the syngas into ethanol. By leading this initiative in a regional context, we have the opportunity to create a new value chain that would support the commercial development of advanced biofuels in Alberta.



# TCFD disclosure index

Information in the disclosure table below provides linkages to TCFD aligned information, fully or in part, within this report or other disclosures.

TCFD Recommendation		Report Section
<b>Governance</b>		
Disclose the organization's governance around climate-related risks and opportunities.	Describe the board's oversight of climate-related risks and opportunities.	<ul style="list-style-type: none"> <li>• <a href="#">Board oversight of climate-related risks and opportunities</a></li> </ul>
	Describe management's role in assessing and managing climate-related risks and opportunities.	<ul style="list-style-type: none"> <li>• <a href="#">Role of senior leadership</a></li> <li>• <a href="#">Business strategy for a changing energy future</a></li> <li>• <a href="#">Scenario planning</a></li> </ul>
<b>Strategy</b>		
Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's business, strategy, and financial planning where such information is material.	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long-term.	<ul style="list-style-type: none"> <li>• <a href="#">Business strategy for a changing energy future</a></li> <li>• <a href="#">Carbon policy and impacts on Suncor</a></li> <li>• <a href="#">Facility resilience to extreme weather events</a></li> </ul>
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	<ul style="list-style-type: none"> <li>• <a href="#">Scenario planning</a></li> <li>• <a href="#">A new 2°C scenario</a></li> </ul>
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
<b>Risk management</b>		
Disclose how the organization identifies, assesses, and manages climate-related risks.	Describe the organization's processes for identifying and assessing climate-related risks.	<ul style="list-style-type: none"> <li>• <a href="#">Climate-related risk management</a></li> <li>• <a href="#">Leadership in climate policy</a></li> </ul>
	Describe the organization's processes for managing climate-related risks.	<ul style="list-style-type: none"> <li>• <a href="#">GHG emissions and energy use</a></li> <li>• <a href="#">Low-carbon innovation</a></li> </ul>
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	
<b>Metrics and targets</b>		
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	<ul style="list-style-type: none"> <li>• <a href="#">GHG performance and energy use</a></li> <li>• <a href="#">Integrating our GHG performance goal</a></li> <li>• <a href="#">Suncor's 2020 CDP Climate Change Response</a></li> <li>• <a href="#">Suncor's 2020 Report on Sustainability</a></li> </ul>
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.	
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	

# Performance data footnotes

## 1. Overview

Performance data provided throughout our Climate Risk and Resilience report in tables and graphs includes indicators from the 2019 reporting year with trends, where feasible. These notes provide additional details on boundary conditions, and changes in methodologies, definitions, business segment structure changes or changes to historical data. We also implement our own internal guidelines and definitions for data gathering and reporting.

## 2. Reporting boundaries

Performance data is collected and reported for all facilities operated by Suncor (100%, not adjusted for Suncor's ownership share), and our joint venture interests operated by other organizations are not included. Facilities are subject to annual planned and unplanned maintenance activities, which may impact consistent year-over-year trends. Facilities that are purchased and subsequently operated by Suncor in the middle of a reporting year are pro-rated based on the date of operatorship.

## 3. Summary of business segments and operations included in performance data:

- a. Suncor-totals reflect consolidation of data where relevant and applicable.
- b. Upstream (Oil Sands Base) include Millennium and North Steepbank mining, extraction and integrated upgrading facilities, integrated Poplar Creek cogeneration facility (owned and operated by Suncor as of 2015), and associated infrastructure for these assets, but does not include Syncrude.
- c. Upstream (Fort Hills)
- d. Upstream (Oil Sands In Situ operations) data includes oil sands bitumen production from Firebag and MacKay River operations and supporting infrastructure.
- e. Upstream Exploration and Production (E&P) includes:
  - E&P Terra Nova FPSO vessel situated off the east coast of Canada.
  - E&P North America Onshore natural gas assets operated by Suncor. Assets were significantly divested from 2013 to 2015 and in 2018 Suncor sold its mineral land holdings in north-eastern British Columbia to Cambriam Energy Inc.
  - Additional information about our E&P business can be found at [www.suncor.com](http://www.suncor.com).
- f. Downstream (Refining and Logistics) includes refining operations in Montreal, Sarnia, Edmonton, and Commerce City Colo. Suncor previously operated a lubricants business in Mississauga, Ont, which was sold Feb. 1, 2017. 2017 performance data reflects this sale. Other assets include a petrochemical plant and sulphur recovery facility in Montreal, and product pipelines and terminals in Canada. Additional information about our downstream business is available at [www.suncor.com](http://www.suncor.com).
- g. Renewables includes wind power facilities operated by Suncor, and in graphs are reported with the St. Clair ethanol plant, located in Ontario.

## 4. Notes on operational performance and production

- a. See "Advisories," as barrels of oil equivalent and cubic metres of oil equivalent may be misleading indicators of value.
- b. Oil Sands Base production is gross sweet and sour synthetic crude oil associated with mining, extraction and upgrading and includes unprocessed volumes. This may be different than production reported in our 2019 Annual Report.
- c. Fort Hills production is partially upgraded bitumen associated with the paraffinic froth treatment process.
- d. In situ production is net bitumen sales associated with total plant saleable product.
- e. East Coast (Terra Nova) production is total amount of product sold, not flaring or internally produced fuel.
- f. Refining and Logistics net production is reported on a business unit level, where transfers between our facilities have been removed from facility production totals.
- g. St. Clair ethanol plant production is ethanol produced and converted to cubic metres of oil equivalent, on an energy basis.
- h. Wind energy production is in megawatt hours, from Suncor-operated wind facilities, (100%- not adjusted for ownership).



## Performance data footnotes

- i. Our refineries that blend ethanol into gasoline are Sarnia, Montreal, Commerce City and Edmonton.
- j. Production data is inconsistent with our 2019 Annual Report due different reporting boundaries.

### 5. Notes on greenhouse gas emissions (GHG)

#### 5.1 GHG emissions factors

Emissions factors allow us to estimate GHG emissions from a unit of available activity data (e.g. quantity of fuel consumed or product produced).

The metric we use in our Report on Sustainability for reporting GHG emissions is metric tonnes of carbon dioxide equivalent (CO<sub>2</sub>e). This common unit for reporting GHGs represents volumes of gases that have been studied to have an impact on the global atmosphere. CO<sub>2</sub>e means that individual GHGs have been multiplied by their assessed global warming potential (GWP) compared to carbon dioxide (CO<sub>2</sub>). This report (and our 2015-2019 Reports on Sustainability) uses the 100-year GWPs issued by the Intergovernmental Panel on Climate Change's (IPCC's) fourth assessment report (2007), which aligns to several jurisdictions of GHG reporting, including Environment Canada and the U.S. Environmental Protection Agency.

The major impacts of using the GWPs issued by the IPCC's fourth assessment report are that emissions from methane increase slightly due to an increase in the GWP factor from 21 to 25. Emissions from nitrous oxides (N<sub>2</sub>O) decrease slightly with that factor decreasing from 310 to 298.

Other GHGs have also had their GWPs adjusted but have little to no material impact on our total GHG emissions.

#### 5.2 Measuring potential GHG emission sources

As an integrated energy company spanning multiple jurisdictions, sectors and operations, we use several different externally developed and publicly accepted emission factor protocols to develop facility-specific emission calculation methodologies. We select the appropriate protocol for the site-specific fuel type and composition, emission source, facility or jurisdiction being considered. As required by regulators and verified by external auditors, we use internationally accepted GHG protocols and methodologies in determining our overall emissions profile.

In addition to using fuel-specific emission factors, some GHG emissions are calculated using process- or equipment-specific consumption rates in units such as run-hours, and not fuel volumes. Many of our sites have complicated processes that require specific emission factors and methodologies to accurately calculate their emissions.

Primarily, our sites use protocols and methodologies that are required by their operating jurisdiction. However, if no prescribed methodology is required, it may be necessary to use a combination of standardized methodologies at a single facility due to site-and sector-specific details that may not be completely covered by a single standard or regulation. On occasion, more accurate emission factors – measured, calculated from compositional data, or manufacturer-supplied – may be available for specific equipment. These are used whenever and wherever appropriate to ensure we gather the best quality data and use the most accurate measures.

Specific emission factors are calculated from actual measured data rather than applying generic estimated default factors as frequently as possible. In other cases, such as when calculating indirect emissions from externally purchased electric power, we use factors primarily from site-specific factors if available, secondarily where prescribed by regulation and finally, from published emission factors for remaining emission sources.

Due to the unique nature of each site, we have more than 1,400 standard emission factors in our Environmental Information Management System that are applied at different sites. This number does not include thousands of additional factors that are calculated daily for different fuels and sites based on fuel composition analysis. These factors give us real-time gas composition and resulting carbon content.

#### 5.3 The role of regulation in GHG reporting

Many jurisdictions have, or are in the process of developing, prescriptive regulations that specify which factors can be used. For example, the EPA and regulators in Western Climate Initiative jurisdictions such as Quebec and British Columbia all required operators to use specified factors for the 2019 reporting year.

Alberta requires large emitting facilities to use the standard methodology and emission factors in the Carbon Competitiveness Initiative Regulation (CCIR). Each of our sites that report through the CCIR successfully generated positive (approved) verifications for the 2019 reporting year at a reasonable level of assurance.

### 5.4 GHG standard practices and methodologies

External agencies have developed industry-accepted standard methodologies that operators can choose to use in the absence of prescribed methods. The standard practices and methodologies we follow are widely accepted, well researched and documented so the numbers produced are verifiable by governments and third parties, and are consistently applied from year to year.

A partial list of these standard methodologies and guidance documents includes:

- American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
- US EPA Mandatory Greenhouse Gas Reporting Rule
- IPCC Fourth Assessment Report 2007
- World Business Council for Sustainable Development/World Resources Institute Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard 2004
- Environment Canada Greenhouse Gas Inventory 1990 – 2007 Report 2009
- Intergovernmental Panel on Climate Change 2006 Guidelines for National Greenhouse Gas Inventories
- Western Climate Initiative (WCI) Design for the WCI Regional Program, July 2010
- National Renewable Energy Laboratory Life Cycle Assessment of Hydrogen Production via Natural Gas Steam Reforming
- Alberta Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation (Version 1.4)
- O. Reg. 390/18: Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions 2019
- Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere 2019
- Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2019
- Environment Canada National Inventory Report, 1990-2017
- Canadian Association of Petroleum Producers: Guide Calculating Greenhouse Gas Emissions, April 2003

### 5.5 Additional GHG notes

- a. GHG emissions are calculated using facility-specific and referenced methodologies accepted by the relevant jurisdictions each facility is required to report GHG emissions to. Methodology has been followed where a jurisdiction has a prescribed one and if none exist then the most applicable and accurate methods available are used to quantify each emission source.
- b. Absolute CO<sub>2</sub>e emissions represents the total Scope 1 and 2 emissions with no credit taken for low carbon power production. The power credit above is calculated using the cogeneration power exported to the Alberta grid and the intensity in which this power was generated. It is included in determining the GHG emissions intensities.
- c. The Suncor-total intensity calculation incorporates net facility production, minus internal transfers, resulting in a production value reflective of our product sales to market. Suncor-total intensity will therefore not equal the weighted average of business unit intensities. Upstream intensity is the production-weighted average intensities of our Oil Sands Base, Fort Hills, E&P and Fort Hills assets.
- d. In situ (MacKay River) indirect emissions methodology reported since 2014 include electricity purchased from the grid, purchased electricity and steam from the third-party TransCanada cogen. Firebag cogeneration units are owned and operated by Suncor and therefore all cogen emissions contribute to total direct emissions including emissions associated with generating electricity that is sold to the Alberta grid.
- e. Absolute (total) GHG emissions are the sum of direct and indirect emissions.
- f. Direct (Scope 1) GHG emissions are from sources that are owned or controlled by the reporting company. Refining and Logistics direct emissions do not deduct CO<sub>2</sub> transfers to third parties, such as the food and beverage industries.
- g. Indirect (Scope 2) GHG emissions are energy-related emissions that are a consequence of our operations, but occur at sources owned or controlled by another company (e.g. purchases of electricity, steam, heat, and cooling). The indirect energy calculation methodology credits operations for electricity exported to external users and/or other Suncor facilities. Emissions are calculated based on actual supplier data where possible and published literature where supplier data is unavailable.

## Performance data footnotes

- h. Suncor's GHG goal is designed to encourage business choices that reduce Suncor's emissions and the emissions in the global energy system.
- i. To support tracking our goal progress, Suncor developed a methodology that includes both direct emissions reductions from our operated assets and indirect reductions from the use of our products. The data in the GHG performance section reflects our owned and operated assets emissions. Direct and indirect CO<sub>2</sub>e emissions are included for this report. No credit is taken for GHG reductions due to internally generated performance credits, purchased offsets, ethanol lifecycle GHG reductions or wind-generated offsets.
- j. Scenario pathways graph: Daniel Huppmann, Elmar Kriegler, Volker Krey, Keywan Riahi, Joeri Rogelj, Steven K. Rose, John Weyant, et al., IAMC 1.5°C Scenario Explorer and Data hosted by IIASA, release 1.1. Integrated Assessment Modeling Consortium & International Institute for Applied Systems Analysis, 2018. Accessed July 9, 2020, doi: <https://doi.org/10.22022/SR15/08-2018.15429>; url: <https://data.ene.iiasa.ac.at/iamc-1.5c-explorer>.

## 6. Notes on energy consumption

- a. Total energy is equal to the sum of direct and indirect energy. Electricity that is produced and sold to the provincial grids by oil sands and in situ cogeneration units and operated wind farms is converted to an equivalent amount in GJs and deducted from total energy use.
- b. Direct energy is primary energy consumed on-site by Suncor operated facilities.
- c. Indirect energy includes imported electricity, steam, heating and cooling from third parties. The indirect energy calculation method credits operations for electricity exported to external users and/or other Suncor facilities.
- d. The energy intensity of renewables business is based on energy input for ethanol production with wind energy production deducted from that total energy input.

# Advisories

## Forward-looking statements

Suncor's 2020 Climate Risk and Resilience Report contains certain forward-looking statements and forward-looking information (collectively, "forward-looking statements") within the meaning of applicable Canadian and U.S. securities laws. Forward-looking statements in Suncor's 2020 Climate Risk and Resilience Report include references to: the belief that technology and energy innovation has the potential to move emissions reduction from incremental to step change improvement; the expectation that Suncor continues to work toward the requirements to achieve the aims and objectives of the Paris Agreement; the expectation that Suncor continues to invest in performance improvements and be part of energy system transformation as these are critical to business resiliency and long-term shareholder and stakeholder value creation; statements and expectations about Suncor's goal to reduce total GHG emissions intensity from the production of our oil and petroleum products by 30% by 2030; expectations about the impacts to Suncor's GHG intensity due to government mandated production curtailment and COVID-19 impact on demand; the belief that all energy sources, including Canada's oil sands industry, will have a role to play in contributing to a low-carbon future; the belief that there will be further opportunities for advancing energy efficiency involving Syncrude; the expectation that Suncor's facilities are resilient to extreme weather events, including temperature extremes, hurricanes and icebergs and precipitation, droughts and wildfires; the estimated impact of our carbon price outlook; that opportunities are created due to the requirement for steam at crude oil extraction and processing facilities; expectations relating to technology and the expected timing of, impacts and benefits therefrom, including, amongst others, technology being designed, developed or tested by Suncor and its partners such as SAGD, Solvent+, EASE, ESEIEH® ES-SAGD, non-aqueous extraction, froth treatment, permanent aquatic storage structure, paraffinic froth treatment, and autonomous haulage systems; the impact of scale on renewable power and the belief that equipping wind and solar sites with battery storage could further improve effectiveness; the belief that Suncor will continue to meet the demand for liquid fuels while reducing carbon intensity and the reason for such belief; the belief that a price on carbon can be a key market mechanism to lower emissions while promoting low-carbon innovation; expectations relating to hybrid, plug-in hybrid and electric vehicles; the expectation that Suncor will continue to significantly invest in technology development and deployment, and digital technologies to optimize current assets and develop next-generation facilities; the expectation that, over the next year, Suncor expects to continue engagement with investors, including the Climate Action 100+ initiative; the expectation that Suncor will embed sustainable practices in our supply chain, create opportunities for cross-value chain strategic supplier engagement, and enable supply chain contributions to innovation; the belief that Suncor's transition strategy is to steadily reduce the cost and carbon footprint of our base business while investing in new lower-carbon forms of energy, consumer products and services; the belief that, as a new decade begins with focused attention on pandemic-recovery efforts, business plans of leading companies must consider evolving trends and consumer preferences in order to be capable of thriving in a range of possible scenarios; the expectation that Suncor will continue to invest in strategic initiatives and technologies that support continuous improvement across our operations at both our Base Plant operations and Fort Hills such as value chain optimization and automation of mining and upgrading through autonomous haul systems; the belief that, for our in situ operations, Suncor is advancing opportunities and investments to reduce the energy intensity of the extraction process for our existing and future assets; the plan to replace coke-fired boilers with cogeneration units at our Oil Sands Base Plant which is expected to reduce GHG emissions intensity at our Oil Sands Base Plant by approximately 25% by replacing coke, a high-carbon fuel source with lower-carbon natural gas; the belief that Suncor has a strong portfolio of renewable power development sites across Canada that will further reduce reliance on higher-carbon-intensive grids in regions like Alberta and Saskatchewan; the expectation that Suncor will continue to explore the opportunity to develop our first utility-scale solar photovoltaic facility in Alberta to complement our experience in developing, constructing and operating wind power projects; the belief that, as climate regulations are implemented across jurisdictions, renewable power will benefit from greater scale which can improve the technology, efficiency and economic viability; the expectation that demand in our downstream and marketing business will recover from the COVID-19 pandemic as governments lift stay-at-home restrictions and induce economic recovery through stimulus spending; the belief that equipping wind and solar sites with battery storage to optimize the facility's integration could further improve effectiveness; the belief that long-term gasoline demand is expected to be moderated by efficiency improvements in internal combustion engines and increased uptake of biofuels, as well as hybrid and electric vehicles; the belief that our connection to a reliable source of crude oil combined with our investments in biofuels technology will allow us to continue to meet the demand for liquid fuels while at the same time reducing carbon intensity; the expectation that governments at all levels in Canada are seeking to diversify transportation fleets to use lower-carbon intensity fuels and, as a result, the transportation fuelling landscape is expected to change over time; the belief that, in the longer term, diesel will remain the predominant fuel in North America for heavy haulage, aviation, marine and rail, and we see demand growth with increasing economic activity as the world recovers from the COVID-19 pandemic; the belief that heavy-duty vehicle fuel efficiency standards and biodiesel blending will offset some of the economically driven demand growth; the belief that hybrid, plug-in hybrid and electric vehicles will remain cost-effective additions to the passenger vehicle fleet and will, along with fuel efficiency standards, contribute to moderating growth in global gasoline demand; the belief that cost, carbon competitiveness and consumer convenience mean liquid fuels will remain the primary fuel source in vehicle mobility for many years to come; the expectation that heavy

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haul trucks, aviation and marine fuels of the future will require advanced biofuel blending; the belief that a substantial amount of oil will be required for decades as the world gets on track to meet its climate ambitions; the belief that as the energy system transitions away from carbon intensive sources of energy, some level of hydrocarbons will continue to be needed for consumer product, transportation, agriculture and industrial uses; statements about Suncor's three energy futures scenarios to 2050 and the expected impact of these scenarios on the energy market and Suncor; the expectation that sanctioned cogeneration and renewable power projects will add another 1,000 MW of capacity to the power grid; the expectation that the new 2°C scenario will continue informing Suncor's long-term business planning and corporate strategy and allows us to understand what a pathway could entail to keep global temperatures from rising 2°C, or less, by 2100 compared with pre-industrial levels; statements, key insights and expectations about our new 2°C scenario; the expectation that Suncor will continue to advocate for environmental policies and regulations that help us address climate change, including supporting a broad-based price on carbon; the belief that we are committed to continuously improving energy management and reducing GHG emissions as part of everyday operational excellence; the expectation that, over the next decade our goal will be driving operational, energy and fuel efficiency improvements, accelerating the development and implementation of new technologies and encouraging the evaluation of potential low-carbon business opportunities; the expectation that Suncor will continue to work to close the gap in our goal progress over the next decade, realizing the need to continue seeking opportunities to collaborate with solutions-oriented partners in reducing emissions in the energy system; the belief that, in today's complex and rapidly changing world, it will take new technologies and innovative thinking to further reduce our environmental footprint; statements and expectations about Suncor's targeted emissions in four key areas; the belief that our biofuels have the potential to significantly reduce GHG emissions; and the expectation that LanzaJet will produce sustainable aviation fuel from ethanol from recycled pollution and waste products.

Some of the forward-looking statements and information may be identified by words like "expected", "anticipated", "will", "estimates", "plan", "scheduled", "intended", "believes", "projected", "indicates", "could", "focus", "vision", "mission", "strategy", "goal", "outlook", "proposed", "target", "objective", "continue", "should", "may", "aim", "strives", "would", "potential", "committed", "opportunity" and similar expressions.

Forward-looking statements are based on Suncor's current expectations, estimates, projections and assumptions that were made by the company in light of information available at the time the statement was made and consider Suncor's experience and its perception of historical trends, including expectations and assumptions concerning: the accuracy of reserves and resources estimates; the current and potential adverse impacts of the novel coronavirus pandemic; commodity prices and interest and foreign exchange rates; the performance of assets and equipment; capital efficiencies and cost-savings; applicable laws and government policies, future production rates; the sufficiency of budgeted capital expenditures in carrying out planned activities; the availability and cost of labour, services and infrastructure; the satisfaction by third parties of their obligations to Suncor; the development and execution of projects; the receipt, in a timely manner, of regulatory and third-party approvals; assumptions relating to demand for oil, natural gas, distillates, gasoline, diesel and other energy sources; the development and performance of technology; population growth and dynamics; assumptions relating to long-term energy future scenarios; and Suncor's carbon price outlook. Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to Suncor. Suncor's actual results may differ materially from those expressed or implied by its forward-looking statements, so readers are cautioned not to place undue reliance on them.

Risks, uncertainties and other factors that could influence the financial and operating performance of all of Suncor's operating segments and activities include, but are not limited to, changes in general economic, market and business conditions, such as commodity prices, interest rates and currency exchange rates (including as a result of demand and supply effects resulting from the COVID-19 virus pandemic and the actions of OPEC and non-OPEC countries); fluctuations in supply and demand for Suncor's products; the successful and timely implementation of capital projects, including growth projects and regulatory projects; risks associated with the development and execution of Suncor's major projects and the commissioning and integration of new facilities; the possibility that completed maintenance activities may not improve operational performance or the output of related facilities; the risk that projects and initiatives intended to achieve cash flow growth and/or reductions in operating costs may not achieve the expected results in the time anticipated or at all; competitive actions of other companies, including increased competition from other oil and gas companies or from companies that provide alternative sources of energy; labour and material shortages; actions by government authorities, including the imposition or reassessment of, or changes to, taxes, fees, royalties, duties, and other government-imposed compliance costs; changes to laws and government policies that could impact the company's business, including environmental (including climate change), royalty and tax laws and policies; the ability and willingness of parties with whom Suncor has material relationships to perform their obligations to the company; the unavailability of, or outages to, third-party infrastructure that could cause disruptions to production or prevent the company from being able to transport its products; the occurrence of a protracted operational outage, a major safety or environmental incident, or unexpected events such as fires (including forest fires), equipment failures and other similar events affecting Suncor or other parties whose operations or assets

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directly or indirectly affect Suncor; the potential for security breaches of Suncor's information technology and infrastructure by malicious persons or entities, and the unavailability or failure of such systems to perform as anticipated as a result of such breaches; security threats and terrorist or activist activities; the risk that competing business objectives may exceed Suncor's capacity to adopt and implement change; risks and uncertainties associated with obtaining regulatory, third-party and stakeholder approvals outside of Suncor's control for the company's operations, projects, initiatives and exploration and development activities and the satisfaction of any conditions to approvals; the potential for disruptions to operations and construction projects as a result of Suncor's relationships with labour unions that represent employees at the company's facilities; our ability to find new oil and gas reserves that can be developed economically; the accuracy of Suncor's reserves, resources and future production estimates; market instability affecting Suncor's ability to borrow in the capital debt markets at acceptable rates or to issue other securities at acceptable prices; maintaining an optimal debt-to-cash-flow ratio; the success of the company's marketing and logistics activities using derivatives and other financial instruments; the cost of compliance with current and future environmental laws, including climate change laws; risks relating to increased activism and public opposition to fossil fuels and oil sands; risks and uncertainties associated with closing a transaction for the purchase or sale of a business, asset or oil and gas property, including estimates of the final consideration to be paid or received, the ability of counterparties to comply with their obligations in a timely manner; risks associated with joint arrangements in which the company has an interest; risks associated with land claims and Aboriginal consultation requirements; the risk the company may be subject to litigation; the impact of technology and risks associated with developing and implementing new technologies; and the accuracy of cost estimates, some of which are provided at the conceptual or other preliminary stage of projects and prior to commencement or conception of the detailed engineering that is needed to reduce the margin of error and increase the level of accuracy. The foregoing important factors are not exhaustive.

Suncor's Management's Discussion and Analysis for the first quarter of 2020 dated May 5, 2020 and its Annual Information Form, Form 40-F and Annual Report to Shareholders, each dated February 26, 2020, and other documents it files from time to time with securities regulatory authorities describe the risks, uncertainties, material assumptions and other factors that could influence actual results, and such factors are incorporated herein by reference. Copies of these documents are available without charge from Suncor at 150 6th Avenue S.W., Calgary, Alberta T2P 3E3, by calling 1-800-558-9071, or by email request to [info@suncor.com](mailto:info@suncor.com) or by referring to the company's profile on SEDAR at [sedar.com](http://sedar.com) or EDGAR at [sec.gov](http://sec.gov). Except as required by applicable securities laws, Suncor disclaims any intention or obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

## BOEs and conversions

Certain natural gas volumes have been converted to barrels of oil equivalent (boe) on the basis of one barrel to six thousand cubic feet. Any figure presented in boe may be misleading, particularly if used in isolation. A conversion ratio of one barrel of crude oil or natural gas liquids to six thousand cubic feet of natural gas is based on an energy equivalency conversion method primarily applicable at the burner tip and does not necessarily represent a value equivalency at the wellhead. Given that the value ratio based on the current price of crude oil as compared to natural gas is significantly different from the energy equivalency of 6:1, utilizing a conversion on a 6:1 basis may be misleading as an indication of value. Cubic metres of oil equivalent are calculated on the basis of one boe to 0.159 standard cubic metres. As cubic metres of oil equivalent are based on a conversion involving boe, all values are subject to the same limitations as boe, noted above.

## Suncor

Suncor Energy Inc. has numerous direct and indirect subsidiaries, partnerships and joint arrangements ("affiliates"), which own and operate assets and conduct activities in different jurisdictions. The terms "we", "our", "Suncor", or "the company" are used herein for simplicity of communication and only mean that there is an affiliation with Suncor Energy Inc., without necessarily identifying the specific nature of the affiliation. The use of such terms in any statement herein does not mean that they apply to Suncor Energy Inc. or any particular affiliate, and does not waive the corporate separateness of any affiliate.

## Partnerships

The use of "partnership" throughout Suncor's 2020 Climate Risk and Resilience Report does not necessarily mean a partnership in the legal context.

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