

# REPORT ON SUSTAINABILITY 2019



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*Mark Little, President and chief executive officer.*

## CEO MESSAGE

We are in the midst of an exciting time that is helping re-focus the way we work and, even more important, why we do what we do.

We know that to be a successful company in an increasingly complex world, investors, employees, Indigenous communities and partners, governments and stakeholders need to see we have a purpose that goes beyond the balance sheet. More than ever, they want tangible proof of our commitment to the three dimensions of energy development that have long been part of Suncor's vision: continually improving our environmental performance, addressing social challenges, and generating economic value.

These integrated pillars of sustainability will continue to guide us as we embark on the next phase in our company's evolution – what we're calling Suncor 4.0.

Technology and digital solutions will be a big part of Suncor 4.0, but unleashing the full potential of our people is what will get us where we need to be. To secure our competitive advantage for the long term, we must foster a workplace culture where everyone is inspired to be and give their best.

### A TIME OF TRANSFORMATION

We are living in an era of transformation – as a company, as an industry and as a global community. We have choices to make about our shared energy future and the role we will all play in shaping it.

Suncor's commitment to safety, reliability, operational excellence and capital discipline continues – as does our unwavering determination to be a leader in sustainability. Globally, we are all beginning to transform our energy systems toward a low-carbon economy. Suncor has an important role to play in that transition and believe innovation will be critical to our success.

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As polarization increases on various issues, many will choose to take a step back. Suncor will continue to step forward to demonstrate leadership in an increasingly complex world. We are doing this by:

- investing in emerging and potentially transformative technologies, including new digital capabilities
- supporting collaborative solutions on major environmental and societal challenges, including climate change
- working with and learning from Indigenous partners and others to create opportunities for economic and social reconciliation
- further integrating sustainability into our decision-making as we aspire to be a competitive producer for the long term

As we move ahead, we are also asking ourselves how can we best live up to our purpose.

## ENERGY CHALLENGES AND OPPORTUNITIES

For me, answering that question begins with reflecting on the absolutely essential role energy plays in our lives. The availability of reliable and affordable energy is behind the many advances, medical and otherwise, that have made this possible. It's remarkable to think that in the developed world, life expectancy has increased roughly 15% in Canada since I was born.

Energy is the lifeblood of our modern society. It heats and powers our homes, schools and hospitals. It enables us to be mobile. It offers meaningful jobs and careers. And it provides governments with revenues that help fund services and infrastructure for the benefit of all.

At the same time, energy production and consumption comes with costs and risks. We must all address the amount of energy we use and the emissions associated with that use. As a country and as global citizens we need to pursue all forms of energy to provide for an ever growing population, while tackling the environmental challenges associated with its use. With Suncor's focus on sustainability, we remain optimistic the Canadian oil and gas industry will remain part of the global energy mix.

Our optimism is based on a strong history of technology and innovation, continued focus on cost and carbon competitiveness, of putting people first, and building relationships and opportunities with Indigenous Peoples.

Climate change is real and we have a shared obligation to reduce our carbon footprint. The more people are engaged, the greater likelihood of success.

The communities where we operate – many of them home to Indigenous Peoples in Canada – are most directly impacted by the energy industry's activities. Yet for too long, they have not fully shared in the benefits and opportunities of resource development.

I firmly believe energy companies need to recognize they have a unique obligation, and opportunity, to make a difference. We can and should innovate not just on technologies to improve our environmental performance – which Suncor is doing and will continue to do at an accelerated level – but also to address complex social challenges.

Our long-term socially focused sustainability goal is about changing the way we think and act so we can work together with Indigenous Peoples to create opportunities for economic and social reconciliation.

Our partnership with the Fort McKay and Mikisew Cree First Nations on the East Tank Farm development is an example of this kind of innovation in action. The First Nations acquired a 49% equity position in the facility at a value of \$500 million – the largest First Nations business investment to date in Canada.

I was also closely involved in the talks with the First Nations Chiefs that led to this landmark agreement and saw firsthand the power of working more collaboratively with our Indigenous partners.

For Suncor, our social goal is a journey and about much more than commercial success. We will continue to expand our support for Indigenous youth, increase the participation of Indigenous Peoples in our workforce, and improve our employees' awareness of the history and experience of Indigenous Peoples. Above all, we will continue to listen and learn.

Our other major sustainability goal is to further reduce the total greenhouse gas emissions intensity of the production of our oil and petroleum products by 30% by 2030. Our ambition is driving operational, energy and fuel efficiency improvements into our business. Technology and innovation are pointing to a realistic path for reaching that goal, which will also move us toward ultimately bending the curve on our absolute GHG emissions.

This past year, Suncor invested \$635 million in technology development and deployment, including digital transformation. That also includes next-generation in situ technologies that could dramatically reduce GHG emissions from operations.

Fort Hills is another key example of Suncor's commitment to improving environmental performance through technology and innovation. With paraffinic froth treatment (PFT) technology, the barrels will have a GHG emissions intensity on par with the average refined barrel in North America.

This is a significant step forward for our industry. We are finding ways to alter the carbon content in a barrel of crude and, in some cases, leave a portion of that carbon in the ground before it becomes a problematic gas. No other oil-producing jurisdiction is doing this – and, as we make further advances, this will help Canada to earn the trust needed to be the progressive supplier of choice to the global community.

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Suncor's plan is to remain resilient and thrive in tomorrow's low-carbon economy. Our annual Climate Risk and Resilience Report sets out why we believe this is a realistic goal. In 2018, we took another step forward on climate risk transparency by supporting reporting recommendations by the Task Force on Climate-related Financial Disclosures (TCFD), an international initiative of the Financial Stability Board.

## COLLABORATING ON INNOVATION

As we innovate, collaboration remains critical. Again, we take an integrated approach.

Suncor works closely with organizations like Canada's Oil Sands Innovation Alliance (COSIA), Evok Innovations and the Clean Resource Innovation Network (CRIN) on technology solutions that improve environmental performance and reduce costs. The Energy Futures Lab, supports and is an original convening partner, is an example of social innovation that brings together diverse partners to advance a fit-for-the-future energy system. And our work with groups like the Carbon Pricing Leadership Coalition and Canada's Ecofiscal Commission is based on a shared understanding of how the economy and the environment are so closely entwined.

We also work with several other companies as members of the United Nations Global Compact (UNGC) Local Network in Canada. This reflects Suncor's broad support for the UNGC and its 10 principles, which guide our approach to human rights, labour, environment and anti-corruption for all our operations.

Collaboration continues to open us up to new perspectives and possibilities. It helps reinforce and refine our common purpose.

## NEXT STEPS

This brings us full circle – to the conversations we are having at Suncor about what we do, and why, and the actions we are taking to best harness new capabilities that are transforming our world.

What's being called "the fourth industrial evolution" will have a major impact on every industry and economy. Advances in digital technologies such as improved data analytics, artificial intelligence and automation have the potential to make our operations and workplaces smarter and more connected, opening up new ways to enhance our economic, social and environmental performance.

Suncor 4.0 is a chapter in our evolution, and includes accelerating this process to fully leverage technology to improve performance. But it's also about transforming our leadership and culture to develop the workplace of the future – one that is collaborative, connected and understands that we expect our work to have meaning and purpose.

As we continue to innovate, lead and stay true to our purpose, one value will always stand above the rest: safety. Suncor is committed to providing a safe workplace. For us, this is about ensuring everyone goes home to their loved ones safely at the end of their day.

In a time of transition and change, success is with those who are agile and can adapt. But as much as things are changing in our energy world, one thing remains constant: sustainability is at the core of all we do. It's our best guide as we make this journey together.



Mark Little  
President and chief executive officer

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## ABOUT OUR REPORT

Our Report on Sustainability reflects our commitment to continually monitor and assess the impacts and benefits of our business, and to effectively share these efforts.

### FRAMEWORK

We've prepared this report in accordance with the Global Reporting Initiative Standards: Core option, with additional use of their Oil and Gas Sector Disclosures. We also disclose our [United Nations Global Compact \(UNGC\) Communication on Progress](#) throughout this report. This is part of our support for their 10 principles which guide our approach to sustainability. New in our 2019 report are the inclusion of [Sustainability Accounting Standards Board \(SASB\) standards](#), representing financially material sustainability topics and metrics relevant for our industry. For more information about our disclosures against these frameworks, see [Appendix D](#).

### REPORT FORMAT

Available in English or French, we prepared this report to engage a wider audience interested in our sustainability priorities and performance through the use of multiple formats – a downloadable PDF, complemented by an online version available at [sustainability.suncor.com](http://sustainability.suncor.com).

### SCOPE

Consolidated company-wide economic, environmental, safety and social performance from Jan. 1 to Dec. 31, 2018 is reported only for assets we operate (unless otherwise stated), including five-year data trends where possible.

Facility or business segment performance, where applicable, is available for download. Information regarding events or performance in early 2019 may also be included, where possible.

In certain cases, economic and operational data is aligned in a consistent manner with our annual financial reports (which may include non-operated assets). Our financial performance and description of our business is also presented thoroughly in our [2018 Annual Report](#).

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## ASSURING ACCURACY

We engaged Ernst & Young LLP to provide review-level assurance on selected performance indicators for the year ended Dec. 31, 2018 using the GRI Standards and sector disclosures.

## MATERIALITY ASSESSMENT FOR DETERMINING REPORT CONTENT

An important step in preparing our Report on Sustainability is to review the most relevant sustainability priorities for our business and our stakeholders.

*We review priorities for our report annually and, in early 2018, we conducted an in-depth materiality assessment to ensure we accurately considered a broad range of perspectives.*

We reviewed and used the results from this assessment for our 2019 report, and plan to conduct another materiality evaluation later this year in support of our 2020 report.

Materiality, in the sustainability context used for this report, refers to the relative significance of environmental, social, governance and economic priorities and their impacts (both positive and negative) to both our business, and to our stakeholders.

## MATERIALITY ASSESSMENT PROCESS

In early 2018, we were supported by a third-party, with expertise in sustainability reporting and facilitating materiality assessments, to evaluate our priority topics for our Report on Sustainability. We used the following process:

### Identify sustainability topics

An initial list of topics was compiled using several frameworks and methods to better understand areas of importance to our stakeholders and to our business, including:

- Global Reporting Initiative Standards (Materiality Principle and Principles for Defining Report Content)
- Sustainability Accounting Standards Board
- recent Suncor materiality assessments and results

- industry benchmarking and research
- topics identified through our internal strategic issues management process
- ongoing stakeholder engagement and dialogue

This resulted in more than 30 consolidated sustainability topics, which were then ranked and prioritized by groups of stakeholders and internal subject matter experts.

### Rank and prioritize issues

Two workshops were facilitated to capture a wide range of perspectives, including:

- external stakeholders (academia, community members, business partners, investors and NGO)
- internal subject matter experts and cross functional employee leaders

Outputs from both workshops were used to prioritize topics and ultimately determine report content and direction.

## SUNCOR MATERIALITY MATRIX



Hands-on prioritization activities and discussion helped guide participants to consensus on which topics could have a significant impact on Suncor's business success or that would substantively influence the assessments and decisions of stakeholders over the next one-to-three years.

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## MATERIAL SUSTAINABILITY PRIORITIES

Our assessment process identified four material priority topics that consistently ranked high in both workshops and have informed the focus of our Report on Sustainability:

### Indigenous relations

As a pillar of our social goal, the trust and support of stakeholders and Indigenous communities are foundational to successful energy development.

- Our new Downstream Indigenous Business Engagement strategy established in 2018 resulted in a year-over-year doubling of our Indigenous business spend for that business segment
- In 2018, participation in our Summer Aboriginal Student Program grew by 400%, and 40% more employees completed Aboriginal awareness training

### Operational safety and reliability

Suncor is committed to incident prevention and believes that a 'zero incident' workplace is achievable. We continue to raise the bar to improve process safety and reliability performance.

- We've improved our focus on the quality of process hazard analyses for assessing process safety risks, including the digitization of information

### Climate change

Energy is the backbone of the economy and contributes to our well-being. At the same time, the science is clear that the world needs action to reduce carbon emissions and avoid the worst effects of climate change.

- We invested approximately \$635 million in 2018 in technology development, deployment and digital technologies aimed at reducing the carbon intensity of our operations
- Our GHG goal is driving operational, energy and fuel efficiency improvements, and accelerating new technology development and implementation

### Water stewardship

#### Why is this important?

Water is a shared and precious resource. Suncor's integrated water management approach balances optimizing our water use practices with technological innovation to sustainably manage water.

#### Examples of our efforts in this area:

- A new Water Technology Development Centre for COSIA is now operational, allowing new water technologies to be tested to improve the sustainability performance of thermal in situ projects
- We are working to ensure healthy ecosystems and watersheds and engaging closely with Indigenous communities in projects like Lake Miwasin and mine closure planning
- Approximately 88% of the water used by our mining and extraction operations in 2018 was recycled tailings water

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Indigenous Peoples and communities and our stakeholders consider these priorities critically important and, for our business to be successful, they require innovative, strategic approaches and commitment to operational excellence across all functions of our organization.

Other significant priorities were also identified and our performance or approach to these priorities are listed below and included throughout our report. Topics that were evaluated, but not reported on are managed, tracked internally and monitored in the context of an ever changing external landscape. Our approach to technology and innovation is a key theme of this report and is closely related to many of the priorities identified in our materiality assessment.

**OTHER SIGNIFICANT PRIORITIES****Our business**

We aim to deliver competitive and sustainable returns to our shareholders by focusing on capital discipline, operational excellence and long-term cash-flow growth. We are also committed to our value of safety above all else. If managed poorly, these priorities could result in unplanned legal, financial, operational or reputational impacts as well as process and personal safety incidents. Managed well, they support business continuity, increased shareholder value, improved productivity, and a strong and thriving work culture. These priorities include:

- [governance](#) and [ethics](#)
- [health and wellness](#)
- [compliance](#)
- [economic impact](#)
- [public policy](#)
- [inclusion and diversity](#)
- [market access](#)

**Environment**

Our environmental performance represents a key strategic risk and opportunity. The management of these issues is subject to strict scrutiny from both government regulators and stakeholders. Poor management of these issues will result in regulatory fines, stakeholder concern, capital divestment and project costs and delays. Managed well, these issues contribute to a case for innovation, new technology and collaboration with our stakeholders and industry peers to create more value and improved environmental performance. These priorities include:

- [tailings management](#)
- [land use and reclamation](#)
- [biodiversity](#)
- [air quality](#)
- [cumulative impacts](#)
- [spills](#)

**Social responsibility**

Continuously earning and maintaining trust with our nearby communities is crucial to our business. If not managed well, these priorities could potentially result in increased project delays and costs, legal proceedings, stakeholder opposition and an erosion of community resilience. Managed well, they present a vital shared value opportunity to build relationships and provide economic and social benefit. These priorities include:

- [community investment](#) and [social innovation](#)
- [stakeholder engagement](#)

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## STRATEGY AND GOVERNANCE

To realize Suncor's vision we've embraced long-term thinking and strategies. With sound governance and committed leadership, we have created a strong foundation for resilient and sustainable energy development.

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# ABOUT SUNCOR

As Canada's leading integrated energy company, we know that together with our stakeholders we need to look beyond the energy needs of today and understand what is required for the future. Sustainability is about seeing the big picture and working together towards better, more sustainable solutions.

## OUR VALUES

Our values are our guiding principles – our constant set of beliefs. They define the way we do business each and every day.

### Safety above all else

Do it safely or don't do it.

### Respect

Being our best. Giving our best. Showing we care.

### Do the right thing

The right way – with integrity.

### Raise the bar

Pursue with passion. Always add value.

### Commitments matter

We are all connected and part of something bigger.

## WHAT MAKES SUNCOR DIFFERENT FROM OTHER ENERGY COMPANIES?

Suncor's long-life, low-decline asset base, strong balance sheet and integrated model create an advantage. What sets us apart from our peers is our approach to sustainability, technology and innovation, which will help us achieve our social goal, further reduce our carbon emissions intensity by 30% by 2030 through a GHG goal, and grow the cash flow from our business. Making the most of these differentiators has contributed to our industry-leading position and provides the foundation for increasing long-term returns to shareholders.

### Long-life, low-decline reserve base

We are working to unlock value from Alberta's extensive resources through a continued focus on responsible development and cost discipline. Our focus on operational excellence helps to unlock the full value of these resources for all of Canada.

## Sustainable development

We continue to be focused on being a trusted producer of energy while demonstrating sustainability leadership in:

- environmental performance
- social responsibility
- economic prosperity

## A proven integrated model

From the ground to the gas station, we optimize value through each link in the value chain. Our flexible model allows us to capture the shift in value between operating segments during periods of market volatility and limits Suncor's exposure to crude differentials, with a significant portion of bitumen production being upgraded to higher-priced light oil and refined products.

The company's midstream assets and pipeline commitments, strategically acquired with the future in mind, provide operational flexibility through secured market access, including to the U.S. Gulf Coast and other international markets.

## Financial strength

We aim to deliver competitive, sustainable and increasing returns and benefits to our stakeholders, by focusing on capital discipline, operational excellence, and long-term profitable growth. We have returned value to shareholders through consistent dividend growth, with 2018 marking the 16th consecutive year we increased our cumulative annual dividends, while also significantly increasing our share repurchase program.

## SUNCOR'S COMMITMENT TO SUSTAINABLE DEVELOPMENT

Continuous sustainability improvement is critical to our business strategy, and it's woven into the very fabric of the organization. Suncor's chief sustainability officer reports directly to our chief executive officer.

As always, actions speak louder than words. This Report on Sustainability documents several examples.

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# SUSTAINABILITY Q AND A

Eric Axford serves as Suncor's chief sustainability officer, an executive-level position created just over a year ago. He is charged with helping Suncor navigate a complex and challenging external environment, and embedding leading sustainability practices and capabilities across the organization.

## STEPPING FORWARD ON SUSTAINABILITY

In a wide-ranging conversation, Eric discusses the progress made in the past year, the priorities ahead – and how Suncor's recent leadership transition impacts the company's sustainability journey.

**When you took on this position, you said the role of the chief sustainability officer (CSO) is to “ensure the organization is living up to its commitments, values and beliefs” when it comes to sustainability. One year in, how do you think it’s going?**

It's a really interesting question. We live in such complex times that, some days, it feels like taking two steps forward and then one step back. But overall, I think we are making significant progress and continue to evolve.

There've been regulatory and legislative challenges that demanded a lot of our attention. There have also been elections and changes in government. I'm very proud of what we've accomplished and the way we continue to work respectfully with governments of all stripes and in all areas of the country.

We've also maintained – and, I'd say, even strengthened – our relationship with investors at a time when many of them have expressed concerns about Canadian competitiveness. We've stepped forward and outperformed our peers in retaining confidence in our business model and by maintaining our commitment to sustainability as a core value and a key part of our business strategy.

We have a very compelling story because of the breadth of that strategy; it's not only about environmental performance, but also about technology and innovation, Indigenous partnerships and even areas like inclusion and diversity, which are not traditionally thought of as part of the sustainability journey. Investors say they like the way we think and act. It gives them confidence that we are looking at the long term and actually thinking about societal needs and Suncor's role.



*Eric Axford, EVP and chief sustainability officer.*

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### **On that point, one of Suncor's key sustainability goals is a social goal that's focused on strengthening relationships with Indigenous Peoples and communities in Canada. Where have you made progress and what are the opportunities ahead?**

The East Tank Farm agreement is the example that's most often cited, with the Fort McKay and Mikisew Cree First Nations acquiring a combined 49% equity position in a key part of Suncor's Fort Hills infrastructure. That's the largest investment to date by First Nations communities in Canada and widely acknowledged as a game-changer.

But I'm also very proud of equity agreements we've forged with Indigenous Peoples in Ontario and Quebec as well as other partnerships across the country. For example, there are now more than 30 Petro-Canada branded retail sites owned and operated by First Nations.

The goal is to get beyond transactional relationships into real, meaningful long-term engagement – and I think we're making significant progress. One initiative I'm particularly proud of is the recent launch of an Indigenous Youth Advisory Council, something we've been working towards for a while. This is helping to bring the voice of Indigenous youth – the fastest growing segment of the Canadian population – into our organization. That's opening up a whole new world of possibility and it's very exciting to see it take root.

Through our social goal, we are finding new ways to work with Indigenous Peoples to promote economic and social reconciliation. This isn't just about building energy projects; it's about trying to build bridges between cultures. The opportunities are enormous and we've just scratched the surface of what can be accomplished. There's so much more to be done and I believe it will happen if we continue to listen, learn and work together.

### **Suncor's other key sustainability goal is a 30% reduction by 2030 in the total greenhouse gas emissions intensity of the production of its oil and petroleum products. Do you remain confident that can be achieved?**

Yes, very much so. We have a robust plan for attaining that goal and we've seen good progress in developing and implementing the technology and innovation that will get us there. Setting that goal was hugely important in terms of getting us focused on the enormity of driving an energy company to that kind of efficiency and effectiveness. Again, it's something that has been a source of confidence for our investors and other stakeholders.

When you compare us to many of our competitors, you can see we are making tangible investments in technology development and deployment – \$635 million last year alone, when you include our investments in the digital sphere – to set us up for long-term success as we all make the transition to a lower-carbon economy.

We are also thinking increasingly about where the world is going post-2030. We do see continued demand for petroleum products well into the future. We also see Suncor being agile enough to evolve, transition and transform in ways that will make us a trusted energy supplier for decades to come. The holistic nature of our technology and innovation strategies is a big reason for that.

### **When it comes to technology, do investors or other stakeholders sometimes say to you, "Okay, so when are we going to see the big, transformative breakthroughs?"**

Yes, we get asked that all the time. I respond by pointing first to some of the big breakthroughs we've already had in recent years. For one thing, we now have autonomous haul vehicles in place at our mining operations, resulting in safer and more productive mining operations, and improved fuel efficiency. Another example is the PASS (permanent aquatic storage structure) technology being implemented by our tailings reclamation team that's helping address one of our biggest sustainability challenges.

The next key potential breakthrough areas are the solvents and waterless extraction technologies being developed for our in situ sites that could reduce the greenhouse gas (GHG) emissions intensity of our operations by 50 to 70%. These advances are not decades away; they are already in our field of view.

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#### **A lot of this is about ensuring Suncor can continue to succeed through what many predict will be a significant energy transition. What are some of the other key elements of that strategy?**

We have put a lot of emphasis on scenario-planning. I'd say our capabilities in this area have improved ten-fold over the past five years – and will become even better. The dimensions of uncertainty about the future are as great as they've ever been and we need to be planning smartly for a number of eventualities. This will give us the agility to embrace change in a positive way, rather than resist it.

Our annual Climate Risk and Resilience Report is an early and excellent example of this. It's a way of sharing with our investors and other stakeholders the kind of forward thinking that shapes our business planning and decisions. The report describes how we view carbon as a principal risk and the steps we are taking to mitigate that risk. Our business strategies are tested annually against three energy future scenarios, including one envisioning an aggressive decline in oil demand. Under each of these scenarios, Suncor's strategy remains resilient. In other words, we would continue to generate strong economic value, address social challenges and improve environmental performance, while responsibly producing the energy the world needs.

A big part of what global sustainability leadership looks like to investors these days has to do with transparency and disclosure. And I think Suncor is widely acknowledged as a leader in this area. That's why bringing our carbon disclosures in line with the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) is a pretty natural evolution for us.

We believe additional transparency and disclosure can help us tell our story in a better way and explain some of the good things that are going on in the Canadian energy sector. It can help differentiate Canadian energy for what it is, which is some of the most responsible and trusted energy on the planet.

#### **Suncor has made inclusion and diversity a priority. How are things progressing?**

It sometimes feels like our journey on inclusion and diversity is slower than I'd like it to be, but we are working to increase the awareness, capabilities and knowledge of all our employees and leaders so that we advance a more inclusive culture over time. Our Aboriginal Employee Network (now known as Journeys) and our Inclusion and Diversity Council, along with other internal initiatives are opening up conversations and new opportunities to really engage our workforce, our contractors and our suppliers.

I'd also say that Suncor promotes diversity in the way we collaborate with external organizations – including some unlikely partners – on everything from technology to energy policy and social innovation. It's easy to collaborate with people who think exactly as you do, but we've always been deliberate about seeking out and working with people of diverse perspectives. You can see this through our collaborations with groups like Evok Innovations and the Energy Futures Lab, and it's really been to our mutual benefit. You never know where the next great idea or innovation is going to come from and these kinds of collaborations often impact our view of potential solutions and how we conduct our business.

#### **Suncor recently underwent a leadership transition, with Mark Little taking over as president and CEO from Steve Williams. Will that have an impact on Suncor's sustainability vision?**

Sustainability is so deeply embedded in the culture and values of Suncor that leadership transitions are, in this sense, quite seamless. What I think people will see with Mark is a re-articulation of why Suncor exists, what we contribute to the broader society and how critical technology, innovation and creating social value are to Suncor's long-term success.

Mark is deeply and personally committed to strengthening relationships with Indigenous Peoples, not just when it comes to Suncor or the energy business, but across our society. At the same time, people are already seeing his support for the triple-bottom-line concept of sustainability that Suncor has long embraced. He believes, as do I, that you can't meet your environmental goals without a strong economy and you can't have a strong economy without a healthy environment. To be successful over the long term, you also have to meet community needs and address social challenges.

It's not about trade-offs between these elements; they are all interconnected. Sustainability is at the root of all we do – and that sets us up for the long term as we move forward in tomorrow's economy.

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# SUSTAINABILITY GOALS

Suncor's sustainability goals reflect our focused efforts on strengthening relationships with Indigenous Peoples and communities in Canada, and harnessing technology and innovation to reduce our greenhouse gas (GHG) emissions intensity.

Continuous improvement of our long-term environmental, social and economic performance requires an evolution of our business that's beyond our current capabilities.

We established our social and GHG goals in 2016, with a baseline year of 2014, as guide posts to drive performance improvement. More detail about these goals is provided in our [social responsibility](#) and [climate change](#) sections of this report.

## SOCIAL GOAL: STRENGTHENING OUR RELATIONSHIPS WITH INDIGENOUS PEOPLES AND COMMUNITIES IN CANADA

Our social goal reflects our commitment to change the way we think and act as an organization and build greater mutual trust and respect with the Indigenous Peoples of Canada. The goal outlines four areas to focus on through 2025 and beyond where we can work together to advance greater participation of Indigenous Peoples and communities in energy development:

- strengthening relationships with Indigenous Peoples and all Canadians
- partnering with Indigenous youth to develop leadership potential
- partnering with Indigenous businesses and communities
- significantly improving our Indigenous workforce development



*Student researcher measuring trees at Nikanotee Fen.*

## GHG GOAL: REDUCING OUR GHG EMISSIONS INTENSITY

We share in the global challenge to address climate change by harnessing technology and innovation to set us on a pathway to a low-carbon energy system. We aim to reduce total emissions intensity of the production of our oil and petroleum products by 30% by 2030. Our focus on GHG emissions intensity reductions is in these key areas:

- implementing and improving energy efficiency
- developing and deploying new technologies
- investing in low-carbon power
- moving to low-carbon fuels

## OUR COMMITMENT TO WATER STEWARDSHIP

We are also focused on extending our commitment to water stewardship by working to develop a new long-term water goal. Our plan is to take a watershed approach to this goal and work with stakeholders and Indigenous communities to determine where we can have the greatest impact. This is an innovative approach to goal setting and we are excited to see the results of the process.

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# UN SUSTAINABLE DEVELOPMENT GOALS

Suncor supports the United Nations Sustainable Development Goals and shares the view that businesses have a key role to play in the implementation of these goals.

The [United Nations Sustainable Development Goals \(SDGs\)](#) define global development priorities for 2030. They address the global challenges including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice, and are a reflection of an integrated conversation on sustainability. The objective is for businesses, governments and civil society to co-operate and collaborate on a defined set of targets to drive meaningful change.

We recognize Suncor's business activities can have both a positive and a negative impact on the SDGs. We also learned that through our initiatives and activities our work contributes to all 17 goals.

In 2018, we mapped the SDGs across our business to better understand:

- what our positive contributions are
- where we can minimize our negative impacts
- opportunities to collaborate with others for solutions
- areas to maximize value over the short, medium and long-term for a positive contribution

## SUNCOR'S CONTRIBUTIONS IN ACTION

The following are examples of how Suncor is taking action on a select number of SDGs.



### GOAL 5: Achieve gender equality and empower women and girls

- [inclusion and diversity](#) strategies and action plans across the enterprise
- [unconscious bias training](#) to provide learning opportunities to eliminate bias and increase cultural competency
- partnering with Women Building Futures on a program to train women in heavy industrial trades to increase their participation in the workforce



### GOAL 6: Ensure availability and sustainable management of water and sanitation for all

- partnering with Canada's Oil Sands Innovation Alliance (COSIA) to achieve the [COSIA water goals](#), and to generate water-related technologies and innovative ideas targeting efficiency improvements across the oil and gas industry
- [sourcing recycled wastewater](#) for use at our Edmonton refinery from the Gold Bar Wastewater Treatment plant
- implementation of a \$65 million upgrade to our existing [wastewater treatment facility](#) at our Commerce City, CO refinery to leverage membrane ultrafiltration technology to treat and filter water

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## 7 AFFORDABLE AND CLEAN ENERGY

**GOAL 7: Ensure access to affordable, reliable, sustainable and modern energy for all**

- advancing a [portfolio of technologies](#) to lower the carbon intensity of producing bitumen and improve cost competitiveness
- our [renewable power portfolio](#), including a partnership with Aamjiwnaang First Nation in the Adelaide Wind Power Project near Sarnia, Ontario
- using cogeneration, a carbon-efficient form of base load power generation at our oil sands facilities, and exporting excess low-carbon electricity to the [Alberta provincial grid](#)
- investing in [biofuels](#), including the largest ethanol facility in Canada and [investments in biofuel technologies](#)

## 8 DECENT WORK AND ECONOMIC GROWTH

**GOAL 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all**

- partnering with companies and organizations such as [Evok Innovations](#), [COSIA](#) and Clean Resource Innovations Network ([CRIN](#)) to promote and support the growing ecosystem of entrepreneurship focused on clean energy research and technology solutions
- implementing Suncor's social goal to partner with Indigenous businesses and communities, including:
  - an equity partnership in the [East Tank Farm Development](#) with Mikisew Cree First Nation and Fort McKay First Nation in northern Alberta
  - an equity partnership in PetroNor, a distributor of petroleum products owned and operated by the James Bay Cree First Nation in Quebec
- [supporting organizations](#) who share our vision in developing skills and ensuring career success for youth, women, and Indigenous communities, such as Keyano College

## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

**GOAL 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation**

- [partnering with COSIA to develop the Alberta Carbon Conversion Technology Centre](#), a test facility for initiatives such as the [NRG COSIA Carbon XPRIZE](#)
- being a CRIN member, an organization which focuses on creating connections for our resource sector, to advance technologies for use in Canada and global markets
- participating in [Energy Futures Lab](#), which aims to strengthen Alberta and Canada's position as a global energy leader and [Engineering Change Lab](#), a collaborative platform for stewarding the application of science and technology



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**GOAL 12: Ensure sustainable consumption and production patterns**

- developing a [supply chain sustainability strategy](#) to accelerate progress on the environmental and social impacts of our procurement decisions
- investments in businesses such as [Enerkem Inc.](#), which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled
- launching Canada's first coast-to-coast electric charging network through our Petro-Canada stations
- partnering with Titan Tire Reclamation Corporation and the Athabasca Chipewyan First Nation (ACFN) on an innovative solution to recycle scrap industrial mining tires


**GOAL 13: Take urgent action to combat climate change and its impacts**

- [establishing a long-term GHG goal](#) to reduce emissions across our operations
- understanding and reporting on carbon risk and resiliency, and being a [signatory to the Task Force on Climate-related Financial Disclosures \(TCFD\)](#)
- partnering with industry to launch the Alberta Carbon Conversion Technology Centre to test carbon capture, and conversion technologies alongside other researchers and innovators

Our approach to sustainability continues to contribute directly and indirectly to the UN 2030 agenda. We look for partnership opportunities to deliver change at scale. We are committed to supporting a number of aligned initiatives, including:

- The UN Global Compact's 10 principles. [Our commitment and implementation of the principles](#) are integrated throughout this report.
- The ambition of the Paris Climate Agreement and contributing to development of low-carbon policies, such as the Pan-Canadian Framework on Clean Growth and Climate Change.
- The Truth and Reconciliation Commission's Call to Action for the corporate sector to adopt [United Nations Declaration on the Rights of Indigenous Peoples](#) as a reconciliation framework for its relationship with the Indigenous Peoples in Canada.



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Joint venture wind project, Chin Chute, located in Taber, Alberta.

## RENEWABLES

Global demand for low-carbon energy sources is dramatically increasing. Technological advancements continue to drive down costs while increasing efficiency. Renewable power development is a key part of the transition towards a low-carbon future. Suncor has an ambitious goal to reduce total emissions intensity by 30% by 2030 – investment in renewable energy is part of the solution.

### RENEWABLE POWER STRATEGY

In support of Suncor's greenhouse gas (GHG) goal, our Renewable Energy team is working to economically add approximately 800 megawatts (MW) of new, more efficient power capacity over the next 10 years. This new power capacity is expected to contribute to both direct and indirect GHG emission reductions.

*Since entering the renewable power generation business in 2002, we have developed eight wind power projects which have a gross generating capacity of 395 MW.*

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Our renewable energy strategy has three main aspirational drivers:

#### 1. Offset carbon dioxide

Suncor plans to offset 1.5 megatonnes of carbon dioxide (CO<sub>2</sub>) equivalent per year by 2030 through the build-out of 800 MW of renewable power generation with a focus on the western Canadian market. We have a number of renewable energy sites in our development portfolio. The prime focus is on wind and solar power sites in Alberta, starting with the proposed [Forty Mile Wind Power Project](#).

The proposed Forty Mile Wind Power Project is located in southeastern Alberta on approximately 50,000 acres of private land, south and east of the town of Bow Island and in the County of Forty Mile. The project is proposed to be developed in two phases for a total of 400 MW. The proposed project will consist of wind turbines, meteorological tower(s), an electrical collection system(s), turbine access roads and temporary construction facilities.

#### 2. Create economic opportunities for Indigenous groups

Renewable energy is a common interest we share with many Indigenous groups who are working to develop projects for their own consumption as well as for capacity-building with their respective economic development corporations.

In support of Suncor's long-term social goal, we plan to create economic opportunities for Indigenous groups through both service provision and equity partnership opportunities. The jointly-owned [Adelaide Wind Power Project](#) in southern Ontario has contributed to a positive working relationship between Suncor and Aamjiwnaang First Nation.

#### 3. Preserve future optionality for Suncor

Suncor recognized the value of renewable energy 18 years ago and in 2002 commissioned our first wind power project in Gull Lake, Saskatchewan. Since then, our investments have focused on wind power and biofuels, and we continue to evaluate opportunities in other renewable technologies such as solar.

As a large electricity generator in Alberta and an industry player focused on reducing its carbon footprint, Suncor continues to work with policymakers, industry partners and other stakeholders to increase investment in renewable power development.

## RENEWABLE POWER OPERATIONS UPDATE

*Our wind power facilities located in Alberta, Saskatchewan and Ontario have a gross generating capacity of 111 MW, enough to power about 52,000 Canadian homes and to avoid approximately 179,000 tonnes of CO<sub>2</sub> each year.*

Suncor and Aamjiwnaang First Nation are partners on the Adelaide Wind Power Project, in Strathroy, Ontario, with Aamjiwnaang First Nation owning a 25% interest in the project and Suncor as operator. Other Western Canadian wind power projects that we have interests in, but are not the operator of, include Chin Chute, Magrath and Sunbridge.

### Safety

Adelaide's safety performance remains strong with zero recordable incidents to date, thanks in part to working alone technology. This technology uses a mobile phone-sized device worn by personnel while on site that monitors the person's location and well-being via cellular network.

In 2018, Suncor's Renewable Energy and Environment, Health and Safety (EH&S) teams worked with Adelaide's turbine service and maintenance contractor to perform a site EH&S audit. The audit identified some opportunities to improve processes and safety for the project, which are being implemented.

The Renewable Energy team attends regular monthly meetings with project partners and contractors to ensure effective stewardship of the project. Suncor is also an active member of the Canadian Wind Energy Association (CanWEA), which provide resources and conferences to stay current on renewable energy safety, technology and best practices.

### Reliability

Suncor works closely with industry experts and contractors to drive availability and production goals for the Adelaide project. The Renewable Energy team is focused on applying new technology for inspections and data analytics to enhance and optimize the wind farm's performance.

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## Operating expenses

Renewable Energy collaborates with internal supply chain management partners to efficiently execute procurement processes, manage contractor responsibilities and cost controls. This work ultimately builds stronger operating results for the business.

## Regulatory requirements

Suncor closely monitors the requirements of the Adelaide project's Renewable Energy Agreement (REA), the permit awarded by the Government of Ontario. Some REA commitments for Adelaide include:

- species at risk habitat enhancement and monitoring
- raptor mortality monitoring
- water quality and acoustic monitoring
- hazardous waste collection

All requirements are managed by team members and contractors through Suncor's regulatory compliance tool.

## Technology improvements

Data analytics continues to be an area of focus for Suncor, as does [drone technology](#), which looks promising for wind turbine blade inspections. We are also exploring the use of drones for greater reliability, along with safer and more efficient inspections. Suncor monitors and evaluates a variety of new technologies for both new development and operating facilities.

## Community support

Suncor is a partner in four operational wind power facilities in Canada. It's critical that Suncor and its partners demonstrate a commitment to communities in which the facilities have a presence.

- In Alberta in 2018, the Chin Chute Wind Power project made a donation to the Safe Haven Women's Society, and the Magrath Wind Power project made a donation to the Magrath & District Emergency Services department for an equipment upgrade initiative. Suncor also contributed to HALO Rescue's annual fundraising event, the only dedicated medivac helicopter for southern Alberta and southwest Saskatchewan.
- In 2018, the SunBridge Wind Power project in Saskatchewan continued its support of Gull Lake Communities in Bloom and Crescent Point Pool in Gull Lake, Alta. Suncor also supported the Women of the Dawn Counselling Centre in Regina for their annual children's Christmas event.



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## BIOFUELS

Suncor operates Canada's largest ethanol facility by volume – the St. Clair ethanol plant in the Sarnia-Lambton region of Ontario. The plant opened in June 2006 and has a current production capacity of 400 million litres per year.

*St. Clair recently surpassed four billion litres of ethanol production, a site milestone.*

Ethanol produced at St. Clair is blended into Petro-Canada gasoline. Government regulations in Canada and the U.S. require that a percentage of ethanol be blended into fuels to reduce the environmental impacts of vehicle emissions.

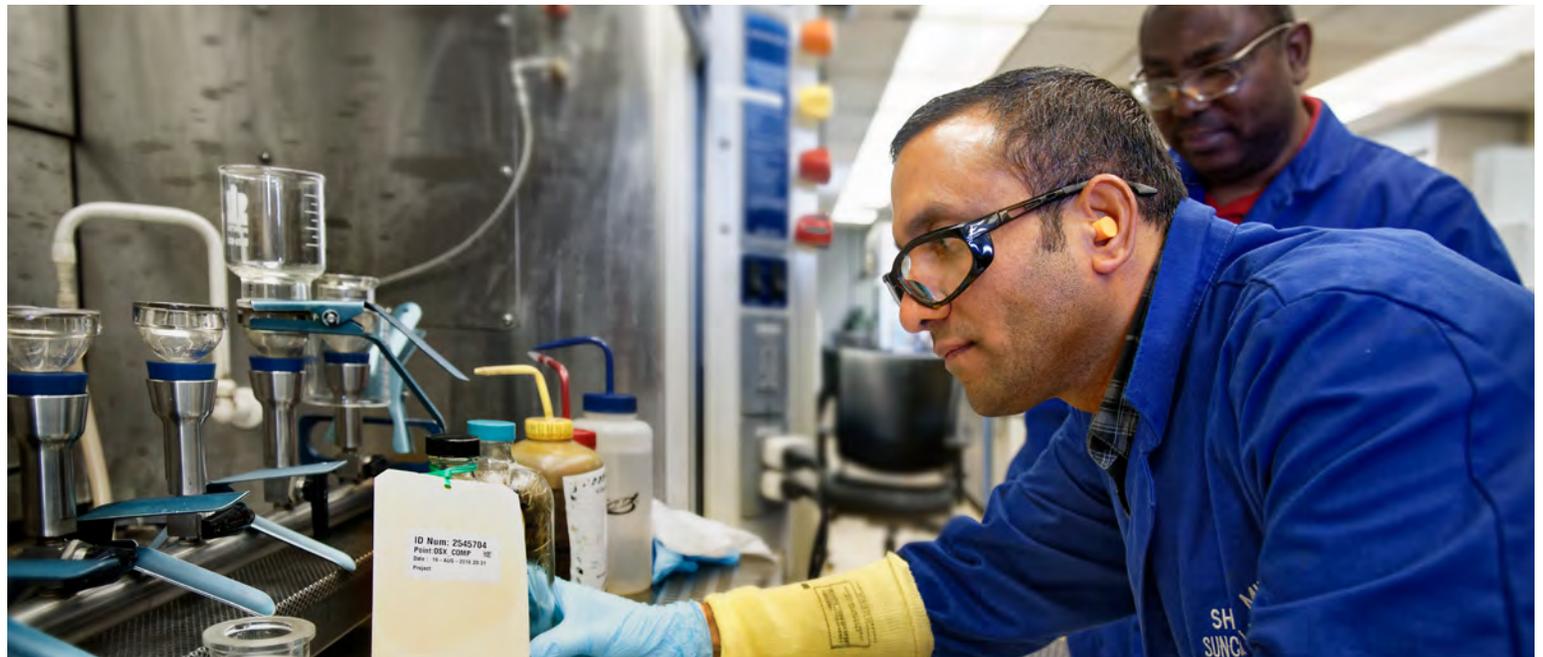
Ethanol is a cleaner-burning, renewable resource produced from corn that is not considered to be suitable for human consumption. The St. Clair ethanol plant uses approximately 40 million bushels of corn annually, a significant portion of Ontario's annual corn crop. The type of corn used as feedstock has traditionally been used to feed livestock. Once the starches are extracted from the corn to make ethanol, the remaining elements are used to make premium cattle feed. A third-party industrial gas plant is attached to the St. Clair plant to capture CO<sub>2</sub> from the fermenters, which is then sold to the local greenhouse industry.

A life cycle value assessment conducted for our St. Clair ethanol plant estimated that overall CO<sub>2</sub> emissions could be reduced by up to 300,000 tonnes per year by blending 10% ethanol from the St. Clair plant into gasoline.

In addition to our St. Clair ethanol plant and to ensure that the product we sell to our consumers remain cost and carbon competitive, Suncor has also invested in the following companies:

- 1. Enerkem Inc.:** 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
- 2. Flint Hills Resources:** a biodiesel plant in Beatrice, Nebraska
- 3. LanzaTech:** a biofuels firm based in the United States that is advancing a proprietary gas phase fermentation technology to recycle waste gas and greenhouse gas emissions into low-carbon fuels and chemicals

According to the International Energy Agency's [Renewables 2018](#) market analysis report released in October 2018, fuel ethanol will account for two-thirds of the worldwide growth in conventional biofuels between 2018 and 2023.



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# CORPORATE GOVERNANCE

Suncor's Board of Directors supervises the management of our business and affairs on behalf of our shareholders. Its responsibilities include governance, strategic planning and stewardship of Suncor. Our board has processes in place to help ensure Suncor lives up to all regulatory requirements and the standards of excellence we set for ourselves.

The board responsibilities include:

- identifying principal risks and ensuring systems are in place to effectively monitor, manage and mitigate those risks, ensuring Suncor has an effective strategic planning process
- overseeing the establishment and enforcement of [Suncor's Standards of Business Conduct](#)
- ensuring systems are in place for communication with investors and other stakeholders
- selecting, monitoring and evaluating executive leadership and aligning management's decision-making with long-term shareholder interest
- ensuring processes are in place to monitor and maintain the integrity of Suncor's internal controls and management information systems

## A DIVERSE AND EXPERIENCED BOARD

The Canadian Board Diversity Council (CBDC) notes that having a diverse, experienced and well-credentialed Board of Directors improves board discussions, contributes to greater diligence when decisions are being made, and leads to improved financial performance and shareholder value.

Suncor's board aims to have directors with a range of perspectives, insights and views on the issues affecting Suncor. It searches for members from diverse backgrounds, considering gender, ethnicity/Indigenous status, age, business experience, professional expertise, personal skills, stakeholder perspectives and geographic background.

Suncor is a proud supporter of the 30% Club of Canada, a not-for-profit organization focused on the continued drive toward achieving greater gender balance at all levels, including an aspirational objective of 30% women on boards by 2020. We currently exceed this objective with 33% of our board who are women.



## SUNCOR'S GOVERNANCE STRUCTURE

Effective corporate governance comes from leadership and good corporate structure. Economic, environmental and social issues aren't considered separately but evaluated holistically as part of Suncor's strategic decision-making process. This continues to inform our corporate structure. Key features of this governance structure include:

- our board and its committees, which have clearly defined and distinct oversight roles to protect the interests of our shareholders set out in terms of reference
- the board's Environment, Health, Safety and Sustainable Development (EHS&SD) Committee, which monitors management's performance in areas within its mandate
- our executive management team, which integrates key operational and functional accountabilities for maximum efficiency and effectiveness, including a chief sustainability officer

*Good corporate governance is a critical part of our business culture and how our directors make decisions in the best interest of our shareholders.*

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## SUSTAINABILITY GOVERNANCE

## Chief sustainability officer (CSO)

Eric Axford was appointed as Suncor's first-ever chief sustainability officer in 2017. Eric plays a key role navigating the many external relationships and strategic partnerships that are part of Suncor's commitment to sustainability. Eric presents on sustainability matters at meetings of the Environment, Health, Safety and Sustainable Development (EHS&SD) Committee of the board, and represents them at periodic board reviews.

## EHS&amp;SD Committee

The EHS&SD Committee of the board oversees and manages matters relating to environmental, health, safety and sustainable development. The committee meets quarterly to review:

- recommendations to the board about Suncor's strategies and policies on environmental, health, safety and sustainable development
- Suncor's [Operational Excellence Management System](#) (an overarching framework to manage operational risk)
- management's performance and emerging trends and issues in the environmental, health, safety and sustainable development space to ensure we are anticipating future challenges and positioning ourselves to minimize risks
- management stewardship reports as well as the findings of significant external and internal environmental, health and safety investigations, assessments, reviews and audits

## Environment, social and governance (ESG) issues and board practices

ESG factors also play a role in director recruitment, board evaluation and committee representation. To ensure Suncor's board has the right expertise:

- the board revised its skills matrix in 2017 to ensure skills and experience in environment, health, safety and social responsibility were desired competencies
- the governance committee conducts the selection process for new board nominees and seeks to have a representation of diverse backgrounds, experience and skills
- the aspiration of the board diversity policy is to maintain at least 30% gender diversity

## Suncor's board practices on performance evaluation and compensation consider ESG 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



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# RISK MANAGEMENT

Risk management is fundamental to achieving our business goals, and requires a culture of operational discipline.



## RISK MANAGEMENT APPROACH

We make risk-informed decisions that reflect our culture of embedding sustainability considerations including active engagement with Indigenous and community stakeholders, and governed by our guiding principles for risk management.

This requires ongoing identification, assessment, treatment and monitoring of risks inherent to our assets, activities and operations. Some of these risks are common to operations, while some are unique to Suncor. Our risk management program is aligned with the International Organization for Standardization guidelines (the [ISO 31000 Risk management – Guidelines](#)), which were also adopted by the Standards Council of Canada. The guidelines provide principles, a framework and a process for managing risk.

Our risk management practice is governed by our risk management policy, and supported through processes and tools such as risk management standards and the risk matrix to effectively identify and assess risk across the enterprise. This policy and supporting tools drives a culture of being:

- Proactive: We do the right thing by identifying and managing risk in advance.
- Transparent: We encourage openness and honesty about our risks. We actively provide and seek out information so we can make better decisions.
- Consistent: We are disciplined in doing the right thing, the right way to achieve excellence in risk management.

## IDENTIFYING PRINCIPAL RISKS

Principal risks are generally considered those that have the potential to materially impact our ability to meet or support our strategic objectives. In the constantly evolving energy business, new risks can emerge and established risks can take on new forms or orders of magnitude.

We manage identification of new principal risks through our critical and principal risk processes. These risks are further outlined in our [Management's Discussion and Analysis](#), and include:

- carbon risk
- commodity price
- cumulative impact and pace of change
- government/regulatory and policy effectiveness
- information security
- major operational incident (safety, environmental and reliability)
- market access
- project development and execution

## RISK GOVERNANCE

All levels of our organization are engaged in our enterprise risk management (ERM) program. Suncor's Board of Directors and Audit committee are accountable for oversight of our principal risks and ensure systems are in place to manage their impact. Individual business units and functions regularly identify, mitigate and report on critical risks in their areas of business. This coordinated approach fosters a culture of risk governance throughout the enterprise.

Risk responsibility, accountability and ownership are appropriately assigned to ensure management of identified risks. Dedicated risk co-ordinators are embedded in each function, and are instrumental in building risk awareness and competency across the business to ensure proper accountability of risk. Follow-up measures are in place to ensure risk management decisions are properly and effectively implemented and monitored.

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All principal risks must be reported annually to the Board of Directors and Audit committee. Reporting includes details on what's being done to address these risks, how the risks are being monitored and any changes in the risk profile.

Our 2018 Annual Information Form (dated Feb. 28, 2019), provides a comprehensive overview of significant risks applicable to Suncor and its businesses. Since 2016, carbon risk has been included in these principal risks and subsequently undergoes an annual board review. The environment, health, safety and sustainable development committee of the board also oversees this risk.

## RISK ASSESSMENT AND EVALUATION

Once identified, risks are assessed and evaluated in terms of magnitude of impact and likelihood using an internal risk-matrix tool. A single risk-matrix tool allows employees to consistently assess risks and evaluate the consequence and likelihood of risk events. It also helps to assign responsibility for different levels of residual risk. The consequence is based on the following five receptors on the risk matrix:

1. Health and safety
2. Environmental
3. Regulatory
4. Reputation
5. Financial impact

## OPERATIONAL EXCELLENCE MANAGEMENT SYSTEM

Operational excellence is a disciplined way of running our business and using consistent practices to operate in a way that is safe, reliable, cost-efficient and environmentally responsible, as well as to continually improve our performance.

The Operational Excellence Management System (OEMS) is the framework we use to systematically manage operational risk and enable achievement of our operational objectives. Our OEMS enables us to:

- operate safely and reliably
- prevent and mitigate environmental and social impacts
- develop and share best practices

Through formal annual internal assessments and reviews of the system by our leaders, we continually identify opportunities to improve. Our ISO 14001 and 9001 certified facilities are also subject to regular external audits.

## SUSTAINABILITY CONSIDERATIONS IN PROJECT DEVELOPMENT

When initiating new projects, our governance framework ensures we continually raise the bar by systematically embedding sustainability considerations into planning and decision-making. This process is consistent with our commitment to strive for strong environmental performance, strong collaboration and strong stakeholder relationships.

We have a long history of building and maintaining relationships, listening to community needs and concerns, and working together to mitigate potential impacts while seeking opportunities.

By integrating sustainability into our process for developing physical assets we ensure:

- environmental and social risks, as well as opportunities, are identified as part of the project definition
- development options are evaluated against sustainability criteria through the concept selection process
- environmental and social risks are incorporated into the project's risk register
- Suncor's project portfolio supports our strategic sustainability goals and long-term vision

This process informs project development decision-making and ensures asset options include both technical and sustainability considerations in their evaluations. For example, climate change implications are considered early in the asset development process, before we commit significant resources. This ensures we mitigate risks and make the most of opportunities that will enable us to achieve our goal of reducing carbon emission intensity by 30% by 2030.

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# POLICY ENGAGEMENT

We participate in public policy discussions on energy and the environment, and regularly communicate with governments in jurisdictions where we operate.



When participating in public policy dialogue, we ensure our participation is in compliance with all [lobbying regulations](#) and we report government interactions consistent with the law and company policies.

Increasingly in Canada, public policy is developed through open and transparent processes, incorporating the expertise and perspective of a broad range of Indigenous Peoples and stakeholders. Suncor participates in these forums, bringing our industry perspective and a solutions-based mindset to advance responsible development.

We support governments taking a reasoned and outcomes-based approach to policy development. We believe policy should be built on evidence-based information and informed perspectives.

Constructive dialogue and transparent sharing of information are critical in guiding our interaction with governments and stakeholders toward the development of practical policy solutions. These activities promote responsible development of existing and new energy sources. We seek opportunities to mitigate polarization through engaging broadly with diverse interests.

## Our policy position with governments includes:

- supporting Canada's long-term prosperity
- developing vibrant, sustainable communities
- ensuring that Canada remains competitive and able to attract needed investment
- encouraging Indigenous economic collaboration and capacity building
- encouraging a healthy dialogue about energy solutions
- considering energy development and distribution costs and benefits
- understanding the role of and supporting advancements in research, technology and innovation
- ensuring effective policy outcomes and effective and efficient regulation that will enable timely and responsible development
- supporting carbon mitigation policies that address both consumption and production, including a price on carbon
- advocating for policy and regulatory regimes to support deployment of innovations that reduce environmental footprints such as GHG emissions and water management
- supporting Alberta as the first oil and gas producing jurisdiction to limit the greenhouse gas (GHG) emissions from the oil sector, all while allowing for continued growth, investments in technology, and expanding market access

## ECONOMIC POLICY

### Royalties and taxes

Royalties and taxes should deliver a fair return to government, while providing industry with a competitive, stable and predictable fiscal framework on which to base long-term investment decisions.

Policies should recognize market factors, such as challenges faced by corporations competing in a global economy.

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Levies added over and above current royalties and taxes need to be holistically considered and understood in terms of costs, outcomes and competitiveness against other jurisdictions in which Canada's natural resources compete.

**Transparency**

We support policy and regulations that promote transparency and advocate for rules that are consistently applied and respect agreements with Indigenous Peoples.

**Cumulative impact of policy changes**

We continually assess risks associated with existing and proposed policy and regulation changes. The findings are from the assessments to inform our approach with governments and others involved in policy and decision-making. The assessments provide context for policy-makers and regulators so we can fully consider all aspects of potential policy and regulation. This enhances our focus on how to achieve constructive outcomes.

**Market access**

Our oil sands industry makes a strong contribution to meeting global energy demands, while creating jobs, contributing to the economy and generating revenues for government to fund social programs across Canada. We continue to support the development of new pipelines to ensure we have options during unplanned events, to get full value for all our products and to enable future growth.

Suncor is supportive of all the major pipelines that are currently proposed and/or approved:

- Keystone XL
- Line 3
- Trans Mountain expansion

Pipeline projects take several years to approve, develop and make operational, so it also makes sense for us to tap into existing networks to transport our products to market.

Pipelines continue to be the safest, most efficient means of transportation for crude oil and other petroleum products. We are working with stakeholders to address many of these concerns from a producer's perspective and are engaged with governments to the same extent.

Canadians are not receiving the full value for our energy resources and an uncertain regulatory environment hinders investment and growth. Pipeline infrastructure is critical to all Canadians because when we receive full value for our energy resources, we're better able to fund health care and education, and provide employment.

In addition to the existing comprehensive and robust regulatory framework that governs development and operation of pipelines and other large infrastructure projects, the Government of Canada has introduced Bill C-48, Oil Tanker Moratorium Act that received Royal Assent on June 21, 2019. This Act will restrict vessels that transport crude oil or persistent oil to or from ports of marine installations located along British Columbia's north coast.

*We believe efficient, effective and transparent regulatory oversight is the responsible thing to do and will be valuable to accurately inform Canadians, decision-makers and other stakeholders.*

**SOCIAL POLICY****Local community capacity**

Suncor is committed to being a good neighbour and playing a lead role in the strength and resiliency of the communities where we operate.

Building capacity and supporting key community initiatives is an important component of our work in all of our operating regions. For example, in the Regional Municipality of Wood Buffalo we have been working in co-operation with industry partners and local business associations to better forecast future population growth and infrastructure needs.

**ENVIRONMENT POLICY****Federal environmental legislation reviews**

Environmental assessments inform government decision-making and support sustainable development by identifying opportunities to avoid, eliminate or reduce a project's potential adverse impact on the environment and ensure mitigation measures are in place when a project is constructed, operated and decommissioned.

In May of 2016, the Government of Canada initiated a review of Canada's environmental assessment processes with the introduction of Bill C-69, Impact Assessment Act. Bill C-69 aims to enhance predictability and timeliness of environmental assessments for major project reviews to protect Canada's environment and grow the economy.

The legislation expands the types of impacts to understand how a proposed project could affect not just the environment, but also health, social and economic impacts as well as impacts on Indigenous Peoples over the long term.

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Since 2016, Suncor was actively engaged in the federal government consultation process to ensure that our concerns were considered in the proposed legislation. In June 2019, Bill C-69 received Royal Assent.

While we support the intent of Bill C-69 with its early planning phase that includes clear timelines, permitting and Indigenous consultation requirements, we are concerned that the Bill will not restore investor confidence in our industry and our country. The environmental assessment processes for major projects need to appropriately balance the economy, the environment and social impact while at the same time incent innovation and future investment.

### Lower Athabasca Regional Plan

In 2012, the Government of Alberta approved the Lower Athabasca Regional Plan (LARP). The LARP addresses land-use management in the Lower Athabasca region of Alberta, which includes the area of the province in which Suncor's Oil Sands business is located. The LARP, which was developed pursuant to the *Alberta Land Stewardship Act*, is part of Alberta's approach to managing economic, environmental and social goals, including cumulative environmental effects management on a regional scale.

#### The LARP includes management frameworks for:

- air quality (sulphur dioxide and nitrogen oxide)
- surface water quality
- surface water quantity
- tailings management for mineable Athabasca oil sands
- regional groundwater management

Each of these frameworks includes interim triggers to allow early indications of change. On an ongoing basis, we also participate in discussions that lay a foundation for future policy and regulation on aspects of tailings management, water return, biodiversity, caribou and wetlands.

## GREENHOUSE GAS (GHG) EMISSIONS

### Climate change regulation

Suncor operates in many jurisdictions that regulate, or have proposed to regulate, industrial greenhouse gas (GHG) emissions. We are committed to fully complying with existing regulations and we are engaged with all levels of government to establish or evolve a credible carbon policy regulatory framework for the oil and gas sector in Canada. Our position is that Canada's oil and gas sector are world-class, responsibly developed resources that are needed to meet growing global energy demand. Canada will continue to advance technologies to improve environmental performance and contribute to tackling the climate change challenge.

We are a strong voice in the call for effective policy to address the Canadian oil and gas industry's GHG emissions. In our view, this includes a carbon price signal that incents carbon reduction and a practical regulatory architecture.

Regardless of the strategy chosen to reduce carbon, implementation really matters. We also think it's important for investors and other stakeholders that policy is predictable and certain.

Since 2008, we have advocated publicly in support of a broad-based, economy-wide carbon price. In 2016, we joined the Carbon Pricing Leadership Coalition (CPLC) – and contributed to the CPLC's Canadian industry report in 2017 – to support Canada's Ecofiscal Commission, ultimately broadening the discussion of carbon pricing into the realm of practical policy application.

Our continued collaboration with [Canada's Ecofiscal Commission](#) has generated numerous reports focused on two themes:

- the importance of implementing carbon pricing
- considerations needed for policy design

#### We support regulatory design that:

- is focused on emissions rather than targeting specific sectors and protects against carbon leakage
- drives best achievable performance from existing facilities
- provides clear support for innovation and technology development that enables game-changing solutions
- positions Canada as a leader in energy innovation and ensures competitiveness
- sets challenging but achievable reduction goals with a process that allows for an increase in ambition as technology develops
- is flexible and provides for multi-jurisdictional compliance pathways
- avoids duplication

In Canada, there exists a "patchwork quilt" of carbon pricing policies across the provinces, as well as differences in complementary policies across provinces. Over time, this will mean higher costs than necessary. We advocate for both levels of government to ensure policies work together.

Canada's energy industry has a responsibility to navigate between the aspirational and the realistic, which for the oil sector specifically means keeping the Canadian economy moving, through continued investment in existing energy supply and maintaining critical infrastructure. Policies should provide the certainty required to make necessary investment decisions and not lead to leakage of investment capital.

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There remains much work to be done to define a unified Canadian energy vision for 2050. The need exists for collaborative policy solutions that can advance our nation's economic ambitions while advancing measurable environmental outcomes.

**Canadian federal government**

The federal government's Pan-Canadian Carbon Price Framework requires each province to implement a carbon pricing policy with an overall stringency equivalent to a minimum price of \$20 per tonne, rising to \$50 per tonne over the next four years. Provinces and territories that do not comply are subject to a federal carbon pricing backstop.

Provinces and territories that volunteered to accept the federal plan may use the revenue as necessary for the unique circumstances of their region, including protecting carbon-intense, trade-exposed industries. Involuntary provinces with policies that were viewed to be inadequate are subject to the federal backstop. In these jurisdictions, carbon revenues are generally collected from two streams:

- A consumer-facing carbon tax on all fossil fuels where the majority of the carbon revenues collected are returned to their citizens in the form of a rebate rather than to their provincial governments.
- An output-based pricing system (OBPS) for industrial facilities that emit above 50 kt CO<sub>2</sub>e or more per year, with the ability to opt-in for smaller facilities – protecting the competitiveness of the industrial sector.

The federal government is consulting with industry on how best to use the carbon revenues to help industry reduce their emissions. Under the proposed OBPS structure, the federal government's current direction is to implement a fuel-differentiated output-based standard for emissions from electricity. We believe this approach prolongs coal fired power generation and favours converting coal power plants to natural gas over lower carbon and more efficient forms of power generation that exist in today's energy system, including renewables and cogeneration. This could lead to a higher intensity electricity grid over a longer period of time and therefore increased GHG emissions. Suncor continues to highlight this issue.

**Canadian provincial governments****Alberta**

In April 2019, Alberta elected a new provincial government and for the remainder of 2019, Alberta's industries will continue to be regulated under the current Carbon Competitiveness Incentive Regulation (CCIR) at the economy-wide price of \$30 per tonne.

Starting in 2020, Alberta industries will be regulated under a yet-to-be-developed Technology Innovation and Emission Reduction Fund program (TIER). The proposed construct of the TIER is similar to the previous Specified Gas Emitters Regulation (SGER) that was put in place between 2007 and 2017.

To protect the competitiveness of Alberta trade-exposed industries, the proposed TIER model, similar to SGER, will apply to facilities that emit greater than 100,000 tonnes of carbon dioxide (or equivalent) applying historical facility intensity baseline architecture with a requirement to reduce the carbon intensity of an industrial operation beginning at 10%. A portion of the carbon revenues collected from the TIER program will be used to support emission reduction technologies, a distinct component of Alberta's climate policies since 2007. Electricity generators will be required to meet a "good as best gas" output-based standard similar to the current CCIR.

**Quebec**

Suncor's Montreal refinery in Quebec is regulated under a cap-and-trade program linked to the Western Climate Initiative (WCI). Industries regulated under the program receive an allowance allocation that aligns with a benchmark performance specific to their sector and takes into account competitiveness in a trade-exposed context.

Fuel suppliers are required to purchase allowances to cover the tailpipe emissions of all fuel sold, the cost of which is expected to be largely passed to the consumer, thus acting as a carbon price on fuel consumption.

**Ontario**

In June 2018, Ontario withdrew its participation in the WCI cap-and-trade program in favour of introducing its own Emission Performance System intended to meet the overall stringency of the Federal backstop.

In the interim, Ontario has become an involuntary province subject to the federal backstop. Suncor's Sarnia refinery and St. Clair ethanol plant are both regulated facilities under the federal OBPS where it receives an emissions allowance to protect the competitiveness of our sector. Suncor will work with the provincial government to explore solutions that achieve the required outcomes while minimizing impacts to people and business.

**Newfoundland and Labrador**

The Government of Newfoundland and Labrador's carbon pricing plan took effect on January 1, 2019 with a carbon price of \$20 per tonne of CO<sub>2</sub>e. The plan is a hybrid system comprised of performance standards for large industrial facilities, including large scale electricity generation, plus a consumer carbon tax on transportation, building fuels, electricity generation and other fuels combusted in the province.

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Performance standards for large industrial facilities are legislated under the Management of Greenhouse Gas Act (MGGA) and associated regulations, which apply to all facilities that emit 15,000 tonnes of CO<sub>2</sub>e or more per year.

Similar to Alberta's SGER and CCIR, the MGGA will establish a fund for clean technology through carbon compliance payments made by industrial emitters. This is expected to support technology and innovation as well as provide flexible compliance options and protect the competitiveness of energy-intensive trade-exposed sectors such as the province's offshore petroleum sector.

**Low-carbon fuel standards**

We continue to monitor and consult on numerous policy initiatives such as the federal government's proposed Clean Fuel Standards (CFS) to reduce Canada's GHG emissions through the increased use of lower-carbon fuels.

At Suncor, we've long acknowledged that broad-based carbon policy tools can create an efficient, market-based approach that addresses both consumption and production challenges. It's important to remember that about 80% of overall carbon emissions occur at the point of consumption, while only about 20% are generated in production. Therefore, some tools will need to focus on that 80% to make a real difference.

The challenge is to design a system that economically efficient without adding duplicative layers of cost and administrative burden, while truly complementing GHG policies that can support a carbon price and drive greater emissions reductions at a lower economic cost.

Where complementary policies are added to carbon pricing, the objectives of the complementary policy should be clear and the interaction with other policies, and the environmental outcomes as a result of carbon pricing in particular, should be well understood.

**RENEWABLE ENERGY****Renewable and low-carbon power policy**

Under the proposed OBPS structure, the federal government's current direction is to implement a fuel-differentiated output-based standard for emissions from electricity. We believe this approach prolongs coal fired power generation and favours converting coal power-plants to natural gas over lower-carbon and more efficient forms of power generation that exist in today's energy system, including renewables and cogeneration. This could lead to a higher intensity electricity grid over a longer period of time and therefore increased GHG emissions. Suncor continues to highlight this issue.

In Alberta, policies remain in place that accelerate the transition from coal to renewable electricity and natural gas generation by 2030. Suncor is a proponent of increased cogeneration as a key part of the power mix in Alberta, particularly as the province transitions away from coal. Cogeneration provides reliable, base-load power to intermittent renewable power at the lowest GHG intensity of any hydrocarbon fuel.

Greening the electricity grid through our existing renewable wind assets and highly efficient cogeneration units in addition to our continued commitment to invest in low carbon power is one important pathway for Suncor to be able to make a measurable positive impact in support of our shared environment.

We are the 5th largest electricity generator in Alberta and are keenly focused on reducing our carbon footprint. We have cogeneration units at Oil Sands Base plant, Firebag, MacKay River and Fort Hills facilities, and we export low-carbon excess electricity generated from these units to the provincial grid. Suncor works with policy-makers, industry partners and other stakeholders to increase investment in low and zero carbon power generation. Collaboration between government, industry and other stakeholders is the only way to ensure that measurable environmental outcomes are achieved under electricity market.

**Biofuel policy advocacy**

Canada's renewable biofuels industry is quickly maturing, and Suncor is working to improve its long-term viability as current government support programs directed at first-generation biofuels decline.

As opportunities arise, we invest in advanced renewable energy technologies to complement the existing biofuel industry. This involves funding outside companies whose technology ideas align with the strategic needs of our operations or businesses.

Suncor supports a flexible performance standard for transportation fuel intensity over more narrowly constructed mandates.

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## LOBBYING AND DISCLOSURE

Suncor participates in public policy discussions on a wide range of issues relevant to our business and regularly communicates with governments in jurisdictions where we operate.

We believe communication with government officials (otherwise known as lobbying) improves government decision-making through open dialogue among government, stakeholders and industry and better informs government officials about Suncor, the energy industry and the effects of government policies.

Through our engagement activities, we aim to ensure proposed policy and regulatory development are effective and efficient in establishing and maintaining regulations that provide certainty and consistency for resource developers, while ensuring public and investor confidence.

### GOVERNANCE

Suncor has a policy that applies to all employees. The policy sets out guiding principles for interacting with governments, including required training and reporting, as well as roles and responsibilities.

### MEMBERSHIP DISCLOSURES

Suncor participates in industry groups representing the interests of both the energy industry and the broader business community and, in doing so, promotes the public policy objectives important to us, its shareholders, Indigenous Peoples and other stakeholders. However, our participation as a member of these organizations comes with the understanding that we may not always support every position taken by these organizations or their members.

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Suncor complies with all laws regarding lobbying and lobbying disclosure. As a matter of general practice, we do not engage third-party (consultant) lobbyists. In the event a third-party is hired for lobbying, they work closely with Suncor to ensure they are in compliance with the lobbying laws and respect Suncor policies related to lobbying activities.

We are committed to transparency, and share our approach on lobbying and political donations. We also provide a list of organizations and trade associations that may lobby government to which Suncor pays membership dues of greater than \$50,000.

We have a demonstrated track record of transparent reporting. We believe additional disclosure about the resilience of our business strategy benefits shareholders and stakeholders.

Suncor's enhanced disclosure is consistent with our strong focus on sustainability, reflects our openness to engage with shareholders, Indigenous Peoples and stakeholders, and reflects excellence in transparency within the energy industry in Canada.

The following is a list of organizations and trade associations of which we are a member and that may engage in lobbying of governments.

### \$50K–\$100K

- [Business Council of Canada](#)
- [Canadian Chamber of Commerce](#)
- [Canadian Manufacturers and Exporters](#)
- [Canadian Propane Association](#)
- [Ceres](#)
- [Colorado Petroleum Association](#)
- [Denver Metro Chamber of Commerce](#)
- [Industrial Gas Users Association](#)
- [Public Policy Forum](#)
- [Resource Works Society](#)
- [Strathcona Industrial Association](#)
- [The Sulphur Institute](#)

### >\$100K

- [American Fuel and Petrochemical Manufacturers](#)
- [Canadian Association of Petroleum Producers](#)
- [Canadian Fuels Association](#)
- [Canada's Oil Sands Innovation Alliance](#)
- [Colorado Asphalt Pavement Association](#)
- [International Association of Oil and Gas Producers](#)
- [Mining Association of Canada](#)
- [Sarnia & Lambton Environmental Association](#)
- [Oil Spill Response Limited](#)
- [World Economic Forum](#)

For a listing of the groups that receive funding from the Suncor Energy Foundation, please refer to the [CRA website](#) and search for Suncor.

## POLITICAL CONTRIBUTIONS

As of June 1, 2016, Suncor no longer makes political contributions as a matter of policy, except in exceptional circumstances. Any such contributions will continue to be disclosed in this report.



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## OUR BUSINESS

Suncor is focused on being a low-cost, low-carbon producer and demonstrating leadership in environmental performance and social responsibility, while contributing to a strong economy.

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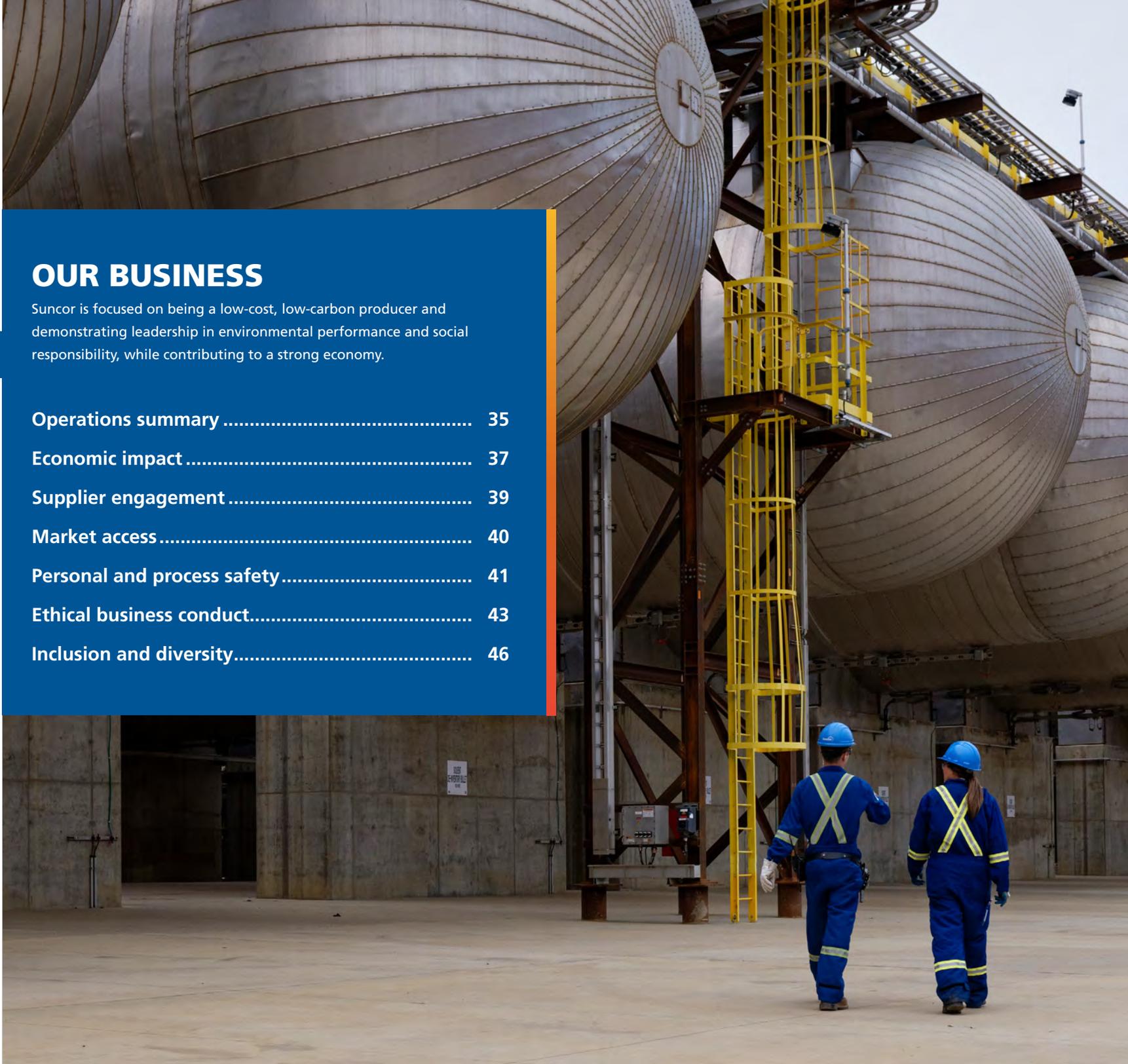


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## OPERATIONS SUMMARY

Suncor is focused on being a low-cost, low-carbon producer and demonstrating leadership in environmental performance and social responsibility, while contributing to a strong economy.

Suncor is Canada's leading integrated energy company. Suncor's operations include oil sands development and upgrading, onshore and offshore oil and gas production, petroleum refining and product marketing under the Petro-Canada brand.

A member of the Dow Jones Sustainability North America Index, and the FTSE4Good Index Series, Suncor is working to responsibly develop petroleum resources while also growing a renewable energy portfolio. Suncor also responds to CDP's Climate Change and Water programs.

Suncor's common shares (symbol: SU) are listed on the Toronto Stock Exchange and the New York Stock Exchange.

### OIL SANDS

Suncor's Oil Sands segment, with assets located in the Athabasca oil sands of northeast Alberta, recovers bitumen from mining and in situ operations and either upgrades this product into synthetic crude oil for refinery feedstock and diesel fuel or blends the bitumen with diluent for direct sale to market.

### EXPLORATION AND PRODUCTION

Suncor's Exploration and Production (E&P) segment consists of offshore operations off the east coast of Canada and in the North Sea, the U.K. and Norway, and onshore assets in Libya and Syria. (Operations in Syria have been suspended indefinitely due to political unrest in the country. Production and liftings in Libya have been intermittent due to political unrest.)

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## CORPORATE AND ELIMINATIONS

The grouping Corporate and Eliminations includes the company's investments in renewable energy projects, results related to energy marketing, supply and trading activities, and other activities not directly attributable to any other operating segment.

## REFINING AND MARKETING

We further unlock the value of the upstream barrel through our strong refining and marketing network. Suncor refines crude oil and intermediate feedstock into a broad range of petroleum and petrochemical products at our four refineries located in Edmonton, Alberta; Sarnia, Ontario; Montreal, Quebec and Commerce City, Colorado.

Our marketing operations sell refined petroleum products to retail, commercial and industrial customers through the more than 1,800 Petro-Canada branded retail and wholesale sites, more than 30 of which are owned and operated by First Nations. The network is supported by a nationwide commercial road transport network and a bulk sales channel throughout Canada as well as other retail stations in Colorado.

## RENEWABLE ENERGY

### Wind power projects

Suncor is a partner in four operational wind power facilities in Canada. These wind power facilities have a gross generating capacity of 111 megawatts, enough to power about 52,000 Canadian homes and avoid approximately 179,000 tonnes of carbon dioxide emissions each year. Our wind facilities are located in Alberta, Saskatchewan and Ontario. In addition, we have secured a number of sites for potential future wind and solar power projects that are in various stages of development, including the proposed Forty Mile Wind Power project located in southeast Alberta.

### St. Clair ethanol plant

Suncor operates Canada's largest ethanol facility – the St. Clair ethanol plant in the Sarnia-Lambton region of Ontario. The plant opened in June 2006 and has a current production capacity of 400 million litres per year. Ethanol produced here is blended into Petro-Canada gasoline.

## OPERATIONS MAP



Suncor's operations around the globe.

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## ECONOMIC IMPACT

The economic benefits of our success extend well beyond the returns we provide to shareholders. In 2018, we contributed more than \$2.6 billion in royalties and taxes for governments – revenues that were then available to help fund public sector programs, including education, health care and critical infrastructure.

Strong economic performance, along with social responsibility and environmental stewardship, is part of being a sustainable energy company. Our investment in energy production, upgrading, refining and marketing benefits the economy by:

- creating well-paying jobs
- promoting economic growth
- providing governments and suppliers with revenues

Development of our core assets also allows us to invest in our renewable energy business and in new technologies to improve company-wide operational efficiency and environmental performance. Our strong economic performance allows us to invest in profitable growth and continuous improvements in our existing operations, and we continue to create value for our shareholders and society at large.

**\$2.6**  
billion

contributed in royalties and taxes for  
governments in 2018

**\$5.2**  
billion

total capital spending in 2018

**\$703**  
million

spent on direct purchases from  
Indigenous businesses in 2018

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In 2018, royalties totalled more than \$1 billion, including \$398 million directed to oil sands royalties. As well, current income tax expense totalled \$1.25 billion\* to governments in Canada and internationally. \$295 million in property taxes were paid to municipalities in Canada.

**CAPITAL SPENDING**

Capital and exploration expenditures totalled \$5.2 billion in 2018, not including capitalized interest, compared to \$5.8 billion in 2017.

**GOODS AND SERVICES**

Our supply chain spending demonstrates we had close to 5,000 Canadian vendors spanning all 10 provinces in 2018, as well as the Northwest Territories and the Yukon. We purchase from nearly 40 countries globally; the United States is our second-largest supplier with more than 1,300 vendors. In 2018, we spent \$10.6 billion on goods and services.

We have five major category groups that are further segmented into categories and subcategories. The range of goods and services is extensive and includes:

- aviation services
- chemicals, gases and fluids
- civil works
- construction services
- drilling and completions
- environment, health and safety services or consulting
- electrical
- engineering and services
- facility services and materials

- fleet and fleet parts
- freight and transportation
- ground transportation
- health and wellness
- instrumentation and controls
- information services (digital projects, hardware, applications and infrastructure)
- lodging
- maintenance services
- marketing and sales
- materials (consumables, steel and PVF)
- mining equipment and services
- offshore equipment and services
- professional services
- rotating machinery
- static equipment
- support services
- tailings on-pond assets
- telecom
- travel and entertainment

The typical split of materials versus services depends on the type of worksite, such as the following:

- operating facilities, where the spend is typically 60% services and 40% materials
- major greenfield construction sites, where the spend is typically 70% services and 30% materials

In addition to our Supplier Code of Conduct, our prequalification and qualification standards, we also have specific practices in place related to local supplier selection. Regional development clauses are in place with suppliers and in contracts across all businesses, and sourcing documents often have criteria that evaluate suppliers on Indigenous or local representation.

Our common practice is to post local contract and supplier opportunities on regional organizations' websites such as Regional Economic Development (REDlink) and Northeastern Alberta Aboriginal Business Association (NAABA). This is to ensure local businesses and suppliers are aware of opportunities in their region.

**INDIGENOUS PARTNERS**

In 2018, we spent \$703 million on direct purchases from Indigenous businesses, a 35% increase over 2017 thanks to new suppliers and doubled spend from Downstream.

Since 1999, Suncor has spent approximately \$5 billion with Indigenous businesses (as direct contractors and subcontractors), nearly half of which has been spent since 2013.

\* Does not include excise taxes collected and remitted by Suncor.

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# SUPPLIER ENGAGEMENT

Suncor has long held a belief that developing solutions requires engaging with shareholders, environmental organizations, local communities, Indigenous communities, governments, suppliers and industry partners.

We find value in thinking about things differently, and this often leads to new ideas, joint problem solving or new ways of working with our stakeholders.

In 2019, we embarked on a journey of integrating sustainability into our supply chain to serve as a driver of change and progress – in order to affect environmental and social impacts of procurement decisions while improving business value.

## SUPPLY CHAIN SUSTAINABILITY STRATEGY

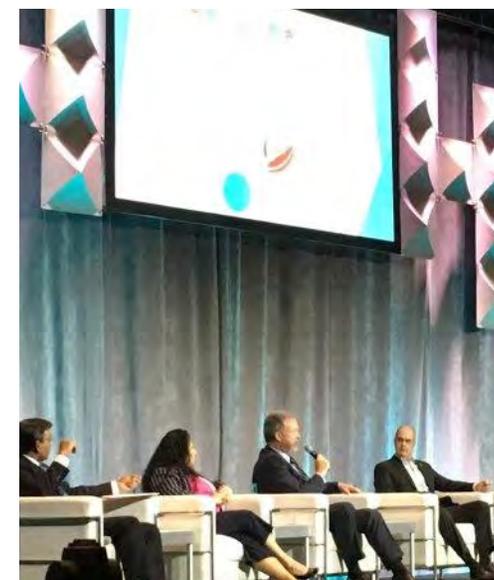
The development of our supply chain sustainability strategy is founded in a systems approach – with a triple-bottom-line lens to identifying risks and opportunities. Our strategy focus areas include:

- Indigenous supplier engagement
- greenhouse gas (GHG) emissions
- inclusion and diversity
- governance, ethics and human rights
- community investment and social innovation
- water stewardship

By building on collaborative relationships with our stakeholders, we aim to embed sustainability into all go-to-market activities and the supply chain management culture throughout our own organization over the coming five years.

In addition, we aim to systematically assess and trace the flow of materials and information in our supply chain. We are benchmarking our performance in the Canadian landscape and partnering with suppliers and other sustainability leaders.

Suncor recognizes the importance of maturing our relationships with suppliers in our industry from transactional to strategic. And, we look forward to these opportunities to build mutual understanding on the best approach for us to meet our business objectives and to address stakeholder expectations.



Howard McIntyre, vice president, Supply Chain & Field Logistics (retired), speaking on behalf of Suncor at the inaugural Forward Summit: Empowering Indigenous Economies.

*Our strategy includes accelerating our leadership position beyond the focus of Indigenous spend, and into capability development with our supplier base creating greater value for our Indigenous partners and suppliers through mutually beneficial relationships and collaboration.*

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# MARKET ACCESS

Our oil sands industry can make a strong contribution to meeting global energy demands, by creating jobs, contributing to the economy and generating revenues for governments to fund social programs across Canada.

Market access is critical and is in the national interest. Suncor supports the development of pipeline infrastructure that provides access to markets, including expanded connectivity to the United States Gulf Coast. We have an interest in all the major pipelines under development, including Keystone XL, Line 3 and the Trans Mountain Expansion. These projects are critical and will bring responsibly developed Canadian crude oil to new and expanded markets. Because pipeline projects take several years to approve, develop and make operational, it also makes sense for the industry to utilize existing rail networks to transport our products to market.

## MARKET ACCESS NOTABLE EVENTS

### Trans Mountain

On June 18, 2019, the Government of Canada approved the Trans Mountain Expansion Project, reaffirming that the infrastructure is critical and in the national interest. The Trans Mountain Expansion will support the diversification of market access for responsibly developed Canadian crude oil and will support the desire for Canadians to receive the full value for Western Canadian crude oil.

### Keystone XL

In November, 2018, the U.S. Federal District Court invalidated the Presidential Permit and ordered construction to cease until the U.S. State Department completed a supplemental environmental impact statement. A November ruling by a Montana-based district judge cited deficiencies in the State Department's environmental analysis. On March 29, 2019, U.S. President Donald Trump issued a new Presidential Permit, intended to speed up the development of the pipeline. A previous injunction was also quashed in the spring of 2019; however, construction activities have still not fully ramped up. The Nebraska Supreme Court has yet to deliver its decision on the validity of the Nebraska Utilities Commission finding on the need for Keystone XL and the approval of the route through the State.

### Line 3

Construction of the Canadian portion of the Line 3 replacement continued in 2018 and is ready to be put in service. However, this requires regulatory approval and ENB is currently negotiating the rate with Shippers as the volume is of incremental capacity is limited given that the US portion continues to be delayed.

On June 28 2018, the Minnesota Public Utilities Commission approved the project, granting a certificate of need and approving Enbridge's preferred route with minor modifications and certain conditions. However, on June 3, 2019, the Minnesota Court of Appeals ruled that the environment impact statement on the Line 3 replacement was inadequate. Enbridge is working with authorities to get the construction permits approved and to have the Line in service in the second half of 2020; however, there is a high risk this will be delayed by another year.

Suncor will continue to work with governments, regulators, industry associations, Indigenous Peoples and stakeholders to support market access objectives.

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# PERSONAL AND PROCESS SAFETY

We place safety above all else. It's our number-one value and nothing matters more.

We work to continuously learn, share and improve safety efforts by embedding safety leadership into our culture, fully engaging all employees in safety and providing a safe work environment for all employees and contractors.

In April 2019, a contractor fatality occurred at Fort Hills. The individual was struck by a light vehicle. This tragic loss of a colleague reminds us that we can never stop thinking about safety.

## 2018 SAFETY PERFORMANCE

Suncor's 2018 combined employee and contractor Recordable Injury Frequency (RIF) performance was 0.37, close to the annual target of 0.36, and the second best on record. Our Lost Time Injury Frequency (LTIF) for 2018 was 0.02.

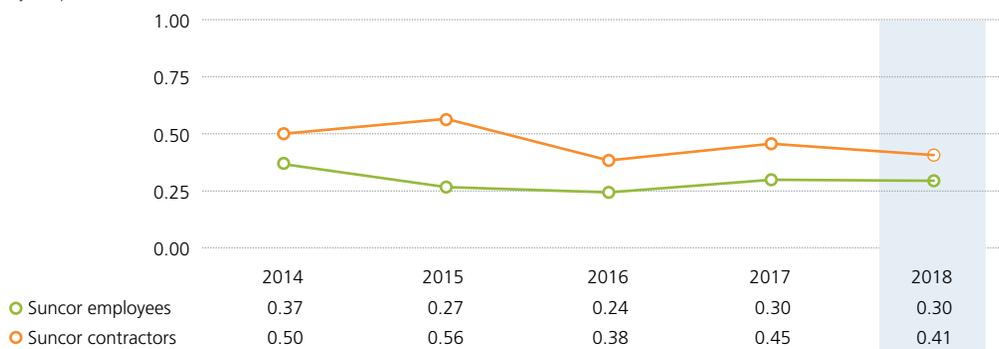
## PERSONAL SAFETY

We believe that a 'zero incident' workplace is achievable, and we promote workforce safety dialogues and participation through various activities and processes, including:

- Incident management:** Suncor's incident management process provides a framework by which we can consistently respond to, investigate and identify the causes of incidents and near misses within our operations. Incident findings are shared across the enterprise to promote learning from incidents and to prevent them from reoccurring.
- Serious injury and fatality (SIF) prevention:** Our SIF program is designed to improve the awareness and management of SIF exposures in our operations. The goal is to bring visibility to SIF exposures, allowing the organization to identify and address their precursors.
- Safety initiatives:** Suncor's safety initiatives are intended to inform, increase awareness, and provide data and recommendations to prevent incidents or losses. Examples of safety initiatives include efforts to address common mechanisms of recordable injury incidents, such as slips, trips and falls and being in the line of fire.
- Engagement:** All employees and contractors are responsible for and committed to safety, including following our Life Saving Rules. To drive and promote the expected safety behaviours we hold regular safety meetings to exchange information and concerns and increase safety awareness. We engage in toolbox talks at worksites focusing on specific hazards, and if a situation or incident merits, we pause scheduled work for safety stand-down sessions to reflect on performance and reinforce our commitment to safety.

### RECORDABLE INJURY FREQUENCY\*

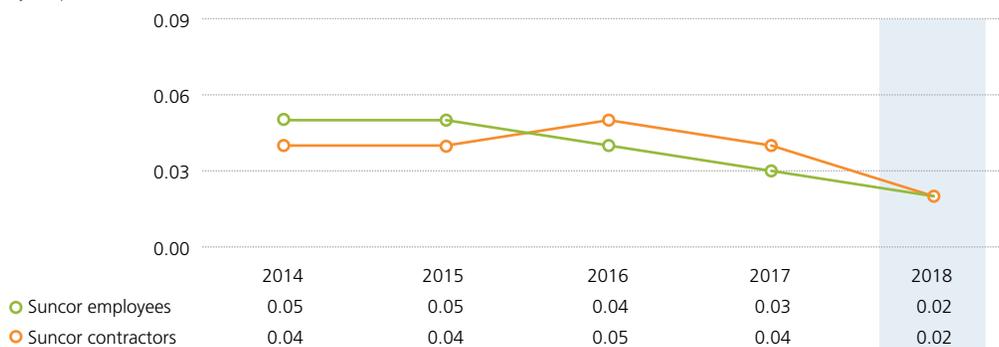
*Injuries per 200,000 hours worked*



\* For additional information about this chart and its data, please refer to data notes (#12 – notes on health and safety).

### LOST TIME INJURY FREQUENCY\*

*Injuries per 200,000 hours worked*



\* For additional information about this chart and its data, please refer to data notes (#12 – notes on health and safety).

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Each year, we hire thousands of contractors to perform work at Suncor job sites. Our contractor management process helps drive safe, productive execution of work on our sites. It's our 'one way' approach to manage contractors.

One requirement of the process is that contractors must complete a comprehensive hazard checklist for each scope of work, and develop an Environment, Health and Safety plan to address those hazards.

**HEALTH AND WELLNESS**

Our employee health and wellness programs are administered by specialists in Occupational Health, Disability Management, and Occupational Hygiene. These professionals are subject matter experts who assist workers in achieving greater health and work-life balance within a safe work environment.

Suncor's Journey to Zero objectives, operational excellence and people values are reflected in the standards, processes and procedures we use to manage health events employees may experience. We provide resources to all employees in the event of an occupational or non-work-related injury or illness to positively influence a safe, timely and sustainable return to work and ensure strict adherence to employee privacy and confidentiality.

**EMERGENCY MANAGEMENT**

Effective emergency management is integral to protecting our workers, the environment and our operations. It encompasses prevention and mitigation, preparedness, response, recovery, and business continuity activities.

Our integrated model is an important part of our Operational Excellence Management System (OEMS). By using established protocols, we can effectively respond to emergencies and unplanned events.

Our employees and contractors regularly conduct training, emergency drills and tabletop exercises to reinforce, verify and improve our emergency preparedness capabilities. Practice prepares us for unplanned situations. Debriefs emphasize learnings and increase effectiveness across all business units. We seek to learn and share lessons from drills, exercises and real events across our business to continuously improve preparedness and response capabilities.

**PROCESS SAFETY**

Suncor is focused on reducing loss of primary containment incidents by assessing incidents and prioritizing gap closure and continuous improvement opportunities. Effective management has ensured alignment across the company to identify opportunities and accelerate performance improvement. Recent improvements include a focus on the quality of process hazard analyses, including digitization of information to improve the efficiency of business processes and competency in consistent identification, and assessment of consequences and likelihood of process safety risks.

**Reliability**

Through a robust governance structure, senior leadership sets enterprise priorities and manages initiatives to ensure a focused effort on maintaining and improving reliability. Stewardship of key indicators and benchmarking is an important component to ensure progress and sustainment of reliability elements such as asset criticality assignments, strategies, root-cause analysis, work execution, bad-actor elimination and safety instrumented systems (SIS) integrity.

**SIS improvement**

These systems are key controls to mitigate process safety and reliability risks. A team of Suncor Process Automation Systems experts continuously work towards improving SIS management. Through this team, Suncor incorporates industry best practices into existing functional safety management programs, to ensure consistency and effectiveness.

**Operational controls**

Operating procedures, safe work practices and operating envelopes enable our front-line employees to manage operational risks. We continue to raise the bar by implementing new standards across the company. Increasing the effectiveness of operational controls helps us manage personal and process safety risks and supports reliability improvement initiatives.

Suncor applies the OEMS to manage process safety and reliability.

We look at lessons from incident investigations to improve process safety and reliability performance. This ensures learnings are embedded in our work practices and mitigating actions are implemented to prevent the reoccurrence of similar incidents. We use audits and management reviews to ensure our practices are effective and that we continuously improve.

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# ETHICAL BUSINESS CONDUCT

Our commitment to integrity and ethics is the foundation for our Standards of Business Conduct Code and the company policy guidance and standards that reinforce it.

The code requires strict compliance with legal requirements and sets standards for the ethical conduct of our business, enabling us to maintain the confidence of our customers, colleagues, shareholders, vendors and the governments and communities where we do business.

## STANDARDS OF BUSINESS CONDUCT CODE

Our business conduct policy statement articulates our commitment to sound legal and ethical business practices. We meet this commitment through our Standards of Business Conduct Code, which is comprised of a number of detailed policy guidance and standards (PG&S) and a code compliance program.

Under the code, every Suncor director, officer, employee and independent contractor is required annually to take an online training course, review the code and certify that he or she:

- has reviewed a summary of the code
- understands the requirements of the code
- has complied with the code; alternatively, has disclosed and resolved any non-compliance with the code

Topics addressed in the code, and detailed further in various PG&S, include:

- competition
- conflict of interest and confidentiality
- trading in shares and securities
- improper payments
- fair dealing in trade relations
- harassment
- accounting, reporting and business control
- protection and proper use of corporate assets and opportunities



Our annual business conduct code affirmation and training for employees and independent contractors is included in our Learning Management System – an online hub where courses are centrally managed. Employees see it listed alongside all of their assigned learning for the year.

The Way We Do Business is a summary of our code of conduct policies. As part of the annual affirmation, employees and independent contractors review and certify they have complied with our code. The guide is an interactive document that can be accessed year-round to support understanding of our expectations on ethical conduct.

We also maintain a supplier code of conduct for suppliers engaged through Suncor's supply chain. It highlights the values that are important to Suncor and is a guide to the standard of behaviour required of suppliers, contractors and consultants who do business with us. The supplier code addresses topics such as safety, harassment, bribery and corruption, human rights and confidential information, among others.

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Throughout the year, we keep ethical business conduct top of mind for employees through our Acting with Integrity intranet, a central employee resource for ethical conduct information. In addition to brief presentations and case studies, the site hosts professional videos in which actors demonstrate unethical behaviour on a number of important topics, such as:

- disclosing material information about the company to the public
- conflicts of interest
- maintaining a respectful workplace
- fair competition
- accepting gifts and entertainment

*“Through our training and resources, we help all representatives of Suncor to understand our policies and their responsibility to conduct business in a safe, fair and ethical manner.”*

– Craig Tomalty, director of compliance and ethics in legal affairs

## STEWARDSHIP TO BUSINESS CONDUCT CODE

- Suncor’s [Board of Directors](#) exercises stewardship over the code
- internal auditors audit the code affirmation process annually
- the vice president of enterprise risk and audit, who has a direct reporting relationship with the audit committee, reports on compliance to that committee

At least once a year, the code is reviewed and if appropriate, updated. Management reports to the governance committee each year on this review process.

Any waivers of code requirements for executive officers or members of the board must be approved by the board or appropriate board committee and disclosed. No such waivers were granted in 2018.

## RAISING ETHICAL CONCERNS

We encourage employees to raise concerns about suspected violations of our business conduct code without fear of reprisal with these teams/departments:

- management
- Legal – compliance
- Corporate Security
- Human Resources
- Internal Audit

In addition, we have established an integrity hotline where they can anonymously report issues of concern to a third-party service provider.

The integrity hotline is available 24/7 to employees, contractors and the public. Any issues of a serious nature are investigated by Corporate Security or Human Resources. The audit committee receives regular updates on Integrity Hotline activities. As per the code, the vice-president responsible for internal audit is charged with maintaining the Integrity Hotline and ensuring that all alleged code violations are thoroughly investigated.

## PREVENTION OF IMPROPER PAYMENTS

Corruption constrains sustainable economic activity. It hinders the development of fair market structures and distorts competition. More importantly, corrupt business practices undermine citizens’ trust in political and business systems, institutions and leadership. We strive to act transparently and in the best interests of the communities where we operate.

Our position on bribery and corruption is clear and detailed in our PG&S on the prevention of improper payments, which includes:

- funds and facilities are not to be used for any illegal or improper purposes
- bribery, kickbacks or any payment to a person to commit an unlawful act, or to influence a person performing public duties, are prohibited, as is the diversion of assets for personal benefit
- personnel are required to comply with all applicable laws concerning improper payments to foreign officials or other third parties

Supervisors and managers are expected to promote a working environment consistent with this PG&S and assist all personnel within their supervision to understand and comply with it.

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Suncor also provides employees with additional specialized training for matters governed by the code where it is determined such training would be beneficial. For example, certain employees directly involved with Suncor's international and offshore operations are required to periodically attend workshops which address, among other items, compliance with sanctions and anti-bribery and anti-corruption legislation and best practices for operating in international jurisdictions where Suncor operates.

Our Board of Directors reviews compliance with this PG&S as part of its annual review of the Standards of Business Conduct Compliance program. Our chief compliance officer oversees this PG&S and provides periodic reports to the general counsel and the governance committee of our Board of Directors.

**PRIVACY**

We collect, use and store personal information about employees, contractors, customers, suppliers, associates and others in the course of business activities. The collection, use and disclosure of personal information is subject to provincial or state, and federal and international laws. We respect privacy rights of all individuals and have policies, procedures and practices to protect those rights.

**COMPETITIVE PRACTICES**

We do not engage in anti-competitive activities. We compete for business vigorously, honestly and in material compliance with all applicable antitrust and competition laws. These laws encourage fair competition in the marketplace for products and services.

Those negotiating or administering agreements, involved in advertising and promotion, or participating in industry associations or similar groups, are required to be familiar with local laws regarding competition and trade practices. We do business with suppliers who, in our judgement, enhance our competitiveness and who share our vision of sustainability and business ethics.

Open, honest and transparent relationships support sound corporate governance and high ethical standards. Within the bounds of commercial confidentiality, we commit to transparent relationships with employees, shareholders and stakeholders alike. We encourage transparent transactions and operating agreements with provisions that respect the local laws of wherever we operate around the world.

Many of our investments and projects are long-term in nature and we expect to be a corporate citizen in communities where we're located for many years. We have a clear interest in social and economic development in regions and countries where we work.

As such, we support public accountability by governments and transparency of revenues, as a means to promote political and economic stability in regions where we operate. We acknowledge work that the Extractive Industries Transparency Initiative does in this regard and, while we haven't formally endorsed the initiative, we consider supporting host countries seeking to implement greater transparency if requested.

**CONFLICT OF INTEREST**

Our governance committee annually reviews a declaration of interest from each board member to determine if any conflicts of interest exist. In addition, directors are required to maintain with the corporate secretary a current list of all other entities in which they have a material interest or on which they serve as a director, trustee, or in a similar capacity.

As per the board's conflict of interest policy, if a director is a party to, or has an interest in any party to, a contract or transaction before the Board of Directors (regardless of the materiality of the contract or transaction), the director must:

- immediately advise the board chair or the particular committee chair
- exit from the meeting for any material discussions or deliberations concerning the subject matter of the contract or transaction
- abstain from voting on any resolution in respect of such contract or transaction

The conflict or potential conflict is recorded in the meeting minutes. The corporate secretary also ensures that directors don't receive board materials in situations where the subject matter of the materials could involve an actual or potential conflict of interest.

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## INCLUSION AND DIVERSITY

We want Suncor to be a great place to work for everyone. We're committed to building an inclusive culture where people's unique perspectives, experiences, backgrounds, cultures and attributes are valued, respected and leveraged so our employees can thrive and contribute to their full potential.

As a large organization with operations across different geographies, Suncor's workforce is made up of diverse demographics and ethnicities – yet we know we haven't totally tapped into the opportunity to create a workplace that fully values differences and fosters a sense of belonging.

We recognize we have work to do to build a work environment where people feel comfortable being themselves, and where bias is faced directly.

By listening to our employees we are challenging assumptions, understanding barriers and being honest with one another on our journey to truly creating a great place to work for everyone.

In 2018, we continued our journey by fostering a common understanding of what inclusion and diversity means:

- **Inclusion** is recognizing, respecting and understanding all the ways we differ, and leveraging those differences to achieve strong results. Inclusion is creating a place where people feel they belong, can be authentic, and can share their differences.
- **Diversity** is all the attributes that make every person unique. Most often this is thought of in terms of gender, age, culture, race or abilities. But diversity also includes our different perspectives, backgrounds, experiences and thinking styles.

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*“Our people are the foundation of all that we do, and creating an environment where everyone can do their best work is fundamental to our success. We know it’s our responsibility to build a great place to work for all of our people.”*

– Paul Gardner, SVP, Human Resources

Building awareness and engaging people in conversations and initiatives around inclusion and diversity is occurring at all levels of the organization. And although we don’t have all the answers yet, we’re talking more and asking some of the right questions.

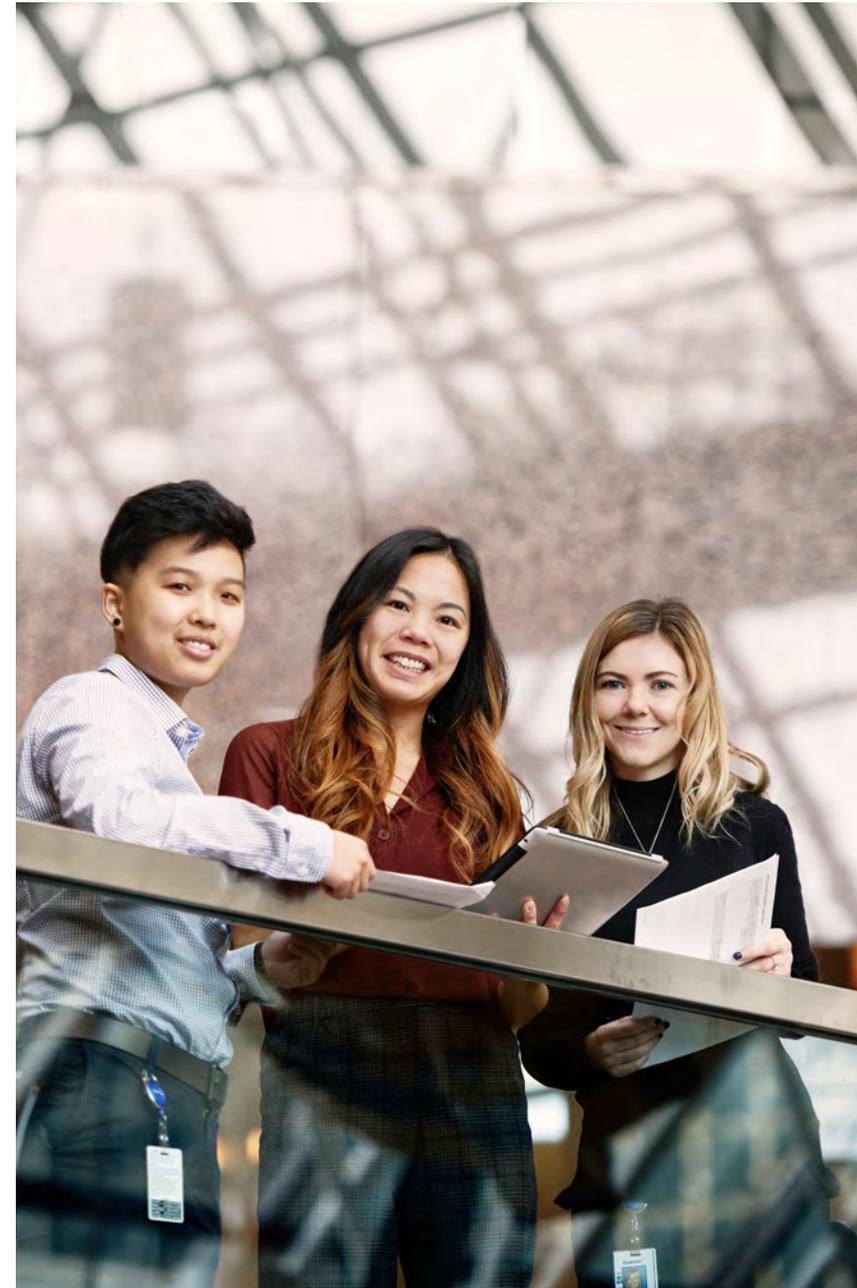
We recognize change will take time, as well as consistent commitment and engagement by leaders and employees. We also recognize that our success will not be based on statistics and metrics alone, but on the power of inclusion and belonging, and the impact it will have on our people and our business outcomes.

**Understanding the demographic makeup of our workforce is helping us.**

We continue to regularly review our representation, retention, advancement and demographic data to inform our progress, guide our focus areas, help tell the story, and ensure we are identifying and breaking down barriers – whether they are cultural, ethnic, generational or gender-based. This will help us improve the way we work together to achieve our goals.

- In the first half of 2019, we invited Canadian employees to voluntarily complete a confidential self-identification form to help us better understand the composition of our workforce, including Indigenous Peoples, persons with disabilities, visible minorities and LGBT persons.
- These groups align with Canada’s *Employment Equity Act* and the Canadian *Human Rights Act*, which encourage the establishment of working conditions that are free of barriers and discrimination, address any conditions of disadvantage in employment, and promote the principle that employment equity requires special measures and the accommodation of differences for these groups in Canada.

Our data has led us to start with focused efforts for specific demographics, particularly women and Indigenous Peoples, but our ultimate outcome is a feeling of inclusion for everyone. We believe this will positively contribute to strong employee engagement and business performance.



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## HOW IS INCLUSION AND DIVERSITY MANAGED?

### Board of Directors' diversity policy

Suncor recognizes the value that diverse points of view can bring. The board strives to include individuals from diverse backgrounds with regard to gender, ethnicity/Indigenous status, age, business experience, professional expertise, personal skills, stakeholder perspectives, geographic background and other attributes. It also aspires to maintain a board where at least 30% of its members are women.

### CEO goal on inclusion and diversity

Suncor's long-term goal is to ensure we have a competent, engaged and diverse leadership, workforce and culture needed to achieve our triple-bottom-line objectives.

Our 2018 enterprise goal was to ensure diversity is improved, valued and optimized. As we continue to learn about inclusion and diversity (I&D), we have realized that what is most important, and brings the most value to people and our organization, is inclusion.

Therefore, our 2019 goal is to significantly improve inclusion and diversity of our workforce. The focus is to strengthen inclusion and diversity knowledge and skills, and implement enterprise and business unit action plans to address systemic barriers.

*“A more inclusive workforce will increase diversity and enable us to benefit from a wide range of employee backgrounds, perspectives and experiences. We believe this leads to a better workplace and ultimately, to stronger performance – economic, social and environmental.”*

– Arlene Strom, SVP and general counsel

## The Inclusion and Diversity Council

Formed in 2017 with a cross-section of senior leaders who represent our business and functional areas, Suncor's I&D Council sets strategy, champions and guides I&D initiatives, and understands and addresses systemic barriers to a more inclusive workplace.

### Standards of business conduct code

The code commits us to maintaining a business environment free from harassment, violence, intimidation and other unethical behaviour. Showing mutual respect and consideration is a fundamental expectation of our workplace.

### Suncor's social goal

Recognizes the value of relationships and that the support and trust of Indigenous communities impacted by energy development is essential for sustainable development.

## HOW IS INCLUSIVITY AND DIVERSITY ENABLED?

Suncor's I&D strategy includes initiatives and actions in five focus areas:

1. Leadership
2. Processes
3. Awareness and skill development
4. Employee involvement
5. Community and industry partnerships

### Leadership

We believe inclusive leadership is a core competency for people leaders at Suncor. Over the past few years, we have focused on building inclusive leadership awareness and skills for all leaders through unconscious bias training. Our goal is to help leaders understand the importance of respecting, valuing and leveraging diversity within their teams and have built elements of this into our leadership programs.

Our I&D Council consists of 10 senior leaders from across Suncor business and functional areas, and Suncor leaders across the enterprise are our I&D champions.

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## Processes

We are working to reduce systemic bias in our people processes, including equitable hiring, performance management and promotions, and career development opportunities.

### Hiring leader training

Eliminating bias when we hire people is an important part of our commitment to improving diversity. To strengthen leaders' abilities to select and hire qualified candidates with the skills, abilities and backgrounds to support Suncor's success, we have held Hiring Leader Training sessions in Calgary, Edmonton and Mississauga. These sessions focused on helping leaders become aware of how unconscious bias can affect a leader's review of applicants and hiring decisions.

To help us attract qualified, diverse candidates to roles at Suncor, we use a software tool to ensure language in our job postings is gender neutral.

## Awareness and skill development

### Unconscious bias training

We continue to provide learning opportunities to eliminate bias and increase cultural competency. In 2018, 64% of managers in our Upstream organization and 80% of front line leaders in our Downstream organization completed an unconscious bias training course.

### Indigenous awareness web-based training (WBT) and classroom-based learning sessions

These programs are intended to increase knowledge and understanding of cultural differences and to build a corporate culture that supports Suncor's Indigenous Relations Policy. At the request of our employees and several organizations, Suncor's Indigenous awareness WBT is publicly available in English and French on [suncor.com](http://suncor.com). The training has been helpful in raising awareness about the history and experiences of Indigenous Peoples in Canada, as well as changing perceptions.

## Indigenous Cultural Learning Experiences

There are a variety of experiences for employees to choose including the [KAIROS blanket](#) exercise; each is intended to support further understanding and awareness of Indigenous Peoples, their unique history, rights and cultures. We partner with Elders and communities to make relevant and meaningful content.

Our HR group delivered I&D Moments – short presentations for employees and leaders – and workshops across our organization to help employees understand Suncor's definition of diversity and the value and importance of inclusion and a sense of belonging.

### Cultural awareness workshops

Suncor hosted nine workshops to build cross-cultural understanding and respect.

## Employee involvement

Employees and employee networks play a critical role in fostering and improving inclusion and respect for diversity, equity, engagement and belonging in the workplace. We recognize the importance of listening to employees and stakeholders, to understand where opportunities lie to improve inclusion and diversity, and to celebrate our successes. Input and feedback from employees and our employee networks' community of practice, provide valuable feedback. There are four employee-led networks currently at Suncor, with more networks forming.

*“In my career I have had the good fortune of working for, and with, a number of great female leaders and professionals. I cannot imagine how much poorer the world would be if it had been denied their talents and contributions. I know my professional world would be much poorer, without question.”*

– Daniel Burt, senior engineer GHG LCA

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Employees at our Sarnia refinery showing their support for International Women's Day – hands up for the letter "W".

In 2019, our employee networks organized and participated in numerous internal and external inclusion and diversity events. Employees wrote I&D-related stories for newsletters, participated in panels, organized and attended learning sessions over the lunch hour, attended workshops and conferences, participated in focus groups and awareness days including International Women's Day, National Indigenous Peoples Day in Canada, Pink Shirt Day, Orange Shirt Day, and World Mental Health Day.

Activity highlights for these networks include:

- **Aboriginal Employee Network (AEN):** The network has been operating since 2015, and currently has more than 700 members. It has:
  - distributed more than 3,000 Moose Hide pins across Suncor in support of the national Moose Hide Campaign, which encourages Indigenous and non-Indigenous men to stand up against violence toward women and children
  - developed and shared cultural insights, short presentations for employees and leaders to use, to help build awareness of Indigenous cultures and history
  - expanded participation in events across the country during National Indigenous Peoples Day and Awareness Week
- **Downstream Workplace Inclusion Network (WIN):** Starting in 2017, WIN has grown to more than 630 members. It has hosted nine cross-cultural competency workshops and produced four newsletters with topics on inclusion, belonging and diverse backgrounds, perspectives, ethnicities, and life experiences.
- **Projects I&D Committee:** has been active since 2018, and has hosted lunch 'n learn sessions on cultural awareness, managing multicultural and multigenerational teams, and Indigenous awareness.
- **Oil Sands Women's Network:** organizes lunch and learns and networking opportunities, and is expanding its mandate.

## Community and industry partnerships

We explore and review opportunities to sponsor and support programs that improve the employability of identified groups. Examples include: Suncor's support for Women Building Futures, sponsorship of [Young Women in Energy](#), and an event hosted by our Supply Chain Management division, which provided immigrants with an understanding of the energy industry and how to look for employment opportunities in the industry.

With support from a dedicated Indigenous workforce development adviser, we are working across our business, and with communities and industry partners, to increase our workforce representation of Indigenous Peoples, as well as support the advancement and retention of Suncor's Indigenous employees.

This includes providing meaningful work experiences to Indigenous post-secondary students through our Summer Aboriginal Student Program in Canada, and supporting career development for Indigenous employees through an Indigenous mentorship program.

We are corporate members of the following external organizations:

- Canadian Board Diversity Council (CBDC)
- 30% Club of Canada
- Canadian Council on Diversity and Inclusion
- Catalyst
- Indigenous Works
- Pride at Work Canada

In 2019, Suncor introduced Yammer – a company-wide internal social networking tool. Employees are using Yammer to share their thoughts on inclusion and respect for diversity. Yammer is a great way to listen to different perspectives and participate in honest and authentic conversations.

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Student volunteers from our Summer Aboriginal Student program at a Calgary Indigenous Awareness Week event.

## WORKFORCE DEVELOPMENT

Creating a great place to work for everyone includes attracting Indigenous students and female employees to our company. We offer a Summer Aboriginal Student Program and support dedicated programs for women in the trades.

### The Summer Aboriginal Student program

Suncor provides Indigenous students with [meaningful work experience](#) across our operations in Canada every year from May to August.

### Early talent (students and new graduates)

In 2018, we hired more female candidates into student and new graduate roles, from 29% in 2017 to 32%.



Participants of the Women Building Futures program.

## PARTNERSHIPS AND COLLABORATIONS TO FURTHER INTEGRATE I&D

### Women Building Futures Suncor Heavy Equipment Operator and Heavy Equipment Technician program

Suncor is working hard to attract and recruit motivated women to work at Suncor mine operations. Our partnership with Women Building Futures (WBF) helps us find women with these qualities.

In 2013, Suncor approached WBF to create and deliver a program that would help engage women in the workplace and build a pipeline of female heavy equipment operator candidates.

The program was designed to provide participants with essential safety certification, productivity awareness, and workplace culture training to prepare them to enter a three-month paid co-op term to become heavy equipment operators at the Millennium site.

During the co-op term, participants receive ongoing training and coaching from WBF and Suncor to support learning and cultural integration. Upon successful completion of the program, employment assistance and job retention support are provided to ensure long-term success for the graduate.

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*Women Building Futures program touring a Suncor site.*

In 2014, Suncor and WBF launched their first customized program for Millennium site. As of February 2018, four classes have graduated and the fifth program concluded in May 2018. The program was also extended to Fort Hills, with one class completed and the second that began in November of 2017.

So far, this partnership has resulted in 66 women hired at Suncor. Of those women who graduated, 15% were Indigenous. The average wage increase for graduates was 112%, which significantly impacted the lives of the women, their families (including 40 children), their communities and beyond.

Through the WBF program, Suncor hired 30 female heavy equipment operators in our Oil Sands operations and eight in Fort Hills, and four heavy equipment technicians in 2017.

Suncor, through the Suncor Energy Foundation and Community Investment, has been a program partner since 2004. To date, our total commitment to WBF has been \$3.4 million.

## Indigenous workforce development

We foster collaborative relationships and partnerships with communities, external organizations, educational institutions, and Suncor leaders and employees to co-create initiatives and practices that increase our workforce representation of Indigenous Peoples, as well as support the advancement and retention of Suncor's Indigenous employees. We recognize we can continue to do more work in this area, and continue to listen, learn and engage with others to make positive changes.

Our Indigenous workforce development adviser works directly with Indigenous communities in Alberta's Wood Buffalo region to understand community needs and initiatives, share information on Suncor's workforce needs, and collaborate with others to strengthen the employment readiness of potential Indigenous candidates.

The adviser also provides insights, advice and Indigenous wisdom to Suncor leaders and teams across the enterprise, to help them build trusting relationships in local Indigenous communities, support Indigenous inclusion in the workplace, and ensure people processes, programs and strategies support Indigenous inclusion.

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## CLIMATE CHANGE

Our future will be shaped by how we respond to a number of complex – and sometimes competing – challenges. The amount of energy we require will continue to increase and, if we are to avoid the worst impacts of climate change, we will have to tackle the emissions challenge associated with that growth.

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## OUR PERSPECTIVE AND ENGAGEMENT

### OUR PERSPECTIVE ON CLIMATE CHANGE

*Energy remains the backbone of a modern economy and contributes to our well-being. It is required to feed us, build and heat our homes, power manufacturing and facilitate transportation. At the same time, the science is clear that the world needs urgent action to reduce carbon emissions and avoid the worst effects of climate change.*

Our energy future will be shaped by a growing population, along with the continued need to move people out of poverty, improve health and education, grow food production, and meet transportation trends all within an increasingly digital world. All of these benefits require energy. The challenge is how to best deliver that energy affordably while reducing carbon emissions.

As a company, we will continue to do our part by taking steps to reduce our own GHG emissions intensity and by developing and investing in emissions-reducing technology that can be applied to other industries. We also encourage dialogue that considers our collective role as consumers of energy, given that 80% of overall carbon emissions occur at the point of consumption. Our future energy system will require commitments from both industrial emitters and individuals.

Suncor supports the approach outlined in the [Paris Agreement](#), but no one group or industry alone can limit the global average increase to below 2°C, relative to pre-industrial levels. To achieve this objective, there must be significant advances in technology, a shift in consumer choice and behaviour, and the development of new energy systems.

All types of energy will be needed and no single solution will meet the challenge. The pathways to a diversified and robust energy system will require getting the best out of both traditional and new sources of energy.

**TABLE OF CONTENTS****CEO MESSAGE****ABOUT OUR REPORT****STRATEGY AND GOVERNANCE****OUR BUSINESS****CLIMATE CHANGE****ENVIRONMENT****SOCIAL RESPONSIBILITY****INNOVATION****PERFORMANCE DATA****APPENDICES****LEADERSHIP IN CLIMATE POLICY**

Suncor operates in multiple jurisdictions across Canada and internationally, which requires that we work with governments and political parties, Indigenous Peoples, think tanks, universities, and environmental advocacy groups to support the development of smart policies that promote cost and carbon competitiveness. Our support for climate leadership is not tied to any particular government. We seek to contribute to the development of effective government policy in support of moving towards a low-carbon economy.

Good policy instills confidence in the industry, enables continued prosperity, 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 a suite of effective market and regulatory mechanisms to lower GHG emissions while promoting low-carbon innovation.

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

- The development of national low-carbon policies such as the:
  - Pan-Canadian Framework on Clean Growth and Climate Change
  - Clean Fuels Standard in Canada
  - *Greenhouse Gas Pollution Pricing Act* (GGPPA) which encompasses the development of the consumer fuel tax and the industrial output based pricing system
- The development of provincial low-carbon policies such as:
  - Alberta's industrial emissions reduction policy, 100 Mt oil sands emissions limit
  - Quebec's cap-and-trade program and Energy Transition Action Plan
  - Ontario's Emission Performance System
  - British Columbia's CleanBC Climate Action Plan and Low Carbon Fuel Standards
- Supporting Canada's Ecofiscal Commission in broadening the discussion of carbon pricing into the realm of practical policy application. The commission brings together economists to inform the critical discussion about the ecofiscal reform that Canada's future requires.
- Supporting the World Bank Carbon Pricing Leadership Coalition (CPLC), a voluntary initiative that aspires to catalyze action toward the successful implementation of global carbon pricing.

- Participating in global energy discussions at the World Economic Forum and the United Nations Climate Change Conference of Parties (COP).

**STAKEHOLDER ENGAGEMENT****Advancing the energy dialogue**

Transitioning an energy system is as much a social and cultural shift as it is a technological and economic shift. Through the Suncor Energy Foundation, Suncor supports organizations to engage Canadians in meaningful discussions on the energy system and the linkages between the environment and the economy. We're also working with our foundation partners to promote an understanding of the changing energy realities of the 21st century and raise awareness among Canadians of the role their choices and lifestyles play in reducing emissions.

For years, we have created spaces for collective dialogue where multiple perspectives, experiences and the best minds may inform Suncor's approach to sustainable energy development. And while we might not always agree on everything, the conversations help us understand what we have in common – a desire for energy to improve quality of life, a healthy environment and vibrant communities. We do it because we all have a role to play in creating our energy future, we recognize the value of relationships and diverse perspectives, and believe it's important to listen, understand and learn from other points of view.

Examples of these collaborations include:

- partnering with the Energy Futures Lab, a multi-sector collaboration designed to help shape the energy future and strengthen Alberta and Canada's position as a global energy leader
- working with a number of organizations to support reconciliation with Indigenous Peoples through leadership development and building community capacity including a focus on environmental priorities
- bringing together social innovators, funding partners, Indigenous leaders and youth, thought leaders, governments and community representatives to explore complex community needs that require collaboration to make progress and see lasting change

We seek to engage with partners in an atmosphere of mutual respect. Our partners are free to publicly criticize our company or industry as they see fit except on specific initiatives in which we've agreed to co-operate. We, in turn, are free to counter statements and research by partners if we know it to be contrary to established facts. Simply put, both sides can agree to disagree, while continuing to work together for the greater good.

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*And while we might not always agree on everything, we do have a common goal – produce energy to improve quality of life and do so in a sustainable way.*

Over the past year, we have engaged with stakeholders directly, through consultations, meetings, workshops, and conferences. We will continue these activities as we develop improved climate disclosure and risk management approaches. Highlights from 2018 and early 2019 include:

- Hosted a Ceres\*-facilitated stakeholder panel to review our sustainability progress. The stakeholders were asked to provide us with critical feedback on our approach and progress toward our sustainability goals, including our GHG goal. We also asked them for ideas to improve Suncor's disclosure in line with the TCFD recommendations.
- The feedback recognized that, while we've made progress, we still have work to do to clearly define and disclose our approach to meeting our GHG goal. To that end, we have included more information in this report on our GHG goal methodology and pathways to reducing our emissions intensity by 30% by 2030.
- Met with investor network, Climate Action 100+, to discuss Suncor's governance approach and board oversight, commitment to the Paris Agreement, as well as disclosure in line with the TCFD.
- Hosted an Energy Transition Day of Learning workshop in partnership with Aviso Capital/NEI Investments, the Royal Bank of Canada, and Teck Resources. The workshop, attended by investors and industry leaders, shared the latest information on the energy transition and was designed to reduce polarization and promote dialogue on a lower-carbon economy in Canada.
- Participated in a number of events to advance climate policy and sustainable energy development such as the Energy Disruptors conference, Clean Energy Ministerial Meeting, and sustainable finance expert panel roundtables.

Over the next year, we expect to host another Ceres-facilitated stakeholder workshop and increase engagement with investors, including the Climate Action 100+ initiative. We look forward to these opportunities to build mutual understanding on the best approaches for Suncor to meet its business objectives and address stakeholder expectations.

## TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

Since mid-2017, the TCFD has worked to improve standards for carbon disclosure. Suncor supports these activities as a way to improve communication and promote learning with our investors on carbon reduction initiatives and performance. We believe the global context is required to provide a complete picture of operational performance, strategic planning and risk management.

**Suncor supports the desire for consistency and transparency embodied in the TCFD recommendations** and sees them as a way to build on our two decades of sustainability reporting and environment, social, and governance (ESG) investor engagement. The recommendations provide a useful framework to describe how businesses are managing climate risk and ensuring corporate strategies remain resilient in a low-carbon future.

There are still many details to work out, particularly around the appropriate disclosure channels to ensure we can provide a transparent and fulsome discussion on our climate strategy over the long term while recognizing the challenges of providing forward-looking information within regulatory financial disclosure requirements. We look forward to working with the task force on this journey to shape and evolve climate risk disclosure so it meets the needs of both companies and investors and leads to better understanding of what's required to transition to a low carbon future.

We have provided a [table](#) showing the sections of this report that are aligned, fully or in part, with the TCFD recommendations. Improvements made in this report include additional information on our GHG goal methodology and our engagement with our supply chain. We have also begun developing a 2°C scenario looking beyond 2040 that we will use to test our business strategy.

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

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**Governance**

Disclose the organization's governance around climate-related risks and opportunities

**TCFD recommendation**

- Describe the board's oversight of climate-related risks and opportunities.
- Describe management's role in assessing and managing climate-related risks and opportunities.

**Report section**

- [Integration of carbon risk into decision making processes](#)
- [The energy system of tomorrow](#)
- [Integration of carbon risk into decision making processes](#)
- [Business strategy for a changing energy future](#)

**Strategy**

Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.

**TCFD recommendation**

- Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
- Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
- Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

**Report section**

- [Business strategy for a changing energy future](#)
- [Carbon policy and impacts on Suncor](#)
- [Facility resilience to extreme weather events](#)
- [Business strategy for a changing energy future](#)
- [Carbon policy and impacts on Suncor](#)
- [The energy system of tomorrow](#)
- [Scenario summaries](#)
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**Risk management**

Disclose how the organization identifies, assesses, and manages climate-related risks.

**TCFD recommendation**

- Describe the organization's processes for identifying and assessing climate-related risks.
- Describe the organization's processes for managing climate-related risks.
- Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

**Report section**

- [Leadership in climate policy](#)
- [Stakeholder engagement](#)
- [Integration of carbon risk into decision making processes](#)
- [GHG performance and mitigating emissions](#)
- [Low-carbon innovation](#)
- [Integration of carbon risk into decision making processes](#)

**Metrics and targets**

Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

**TCFD recommendation**

- Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
- 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.

**Report section**

- [GHG performance and mitigating emissions](#)
- [GHG performance and mitigating emissions](#)
- [GHG performance and mitigating emissions](#)
- [Integrating our GHG performance goal](#)

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# GHG PERFORMANCE AND MITIGATING EMISSIONS

## 2018 GHG PERFORMANCE

In early 2018, Suncor started producing at Fort Hills and production volumes ramped up steadily throughout the year. This addition to our oil sands portfolio resulted in absolute full-year GHG emissions of 22 million tonnes of CO<sub>2</sub>e.

While the total emissions increased approximately 11% year-over-year, the lower GHG emissions intensity associated with the paraffinic froth treatment (PFT) extraction process at Fort Hills helped to reduce corporate emissions intensity by 2% to 0.389 tonnes of CO<sub>2</sub>e per cubic metre of oil equivalent production. We expect the GHG intensity at Fort Hills to decline further, as the facility operates at steady state design capacity.

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 a larger than usual turnaround event which disproportionately affected production in 2018 and to a lesser extent some modifications to emission calculation methodologies\*\*.

The emissions intensity of our downstream refining and supply facilities was slightly lower in 2018, driven by efficiency improvements following major maintenance at the Edmonton refinery and improved refinery utilization rates in Montreal and Commerce City.

Suncor's GHG goal is designed to encourage business choices that reduce Suncor's emissions and the emissions in the global energy system. 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 direct operations emissions. For more information on the goal methodology, please see the [Integrating our GHG performance goal](#) section of this report.

\* 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.

\*\* In 2018, Suncor revised its absolute GHG calculation methodology to align with the GHG Protocol. We also modified the emissions intensity calculation to reflect oil production emissions net of exported electrical power emissions. This was implemented retroactively to 2013 and also in the forecast to 2023. The result is that overall emissions intensity is more comparable to other crude oil production intensities and does not inflate the values due to cogeneration power emissions.

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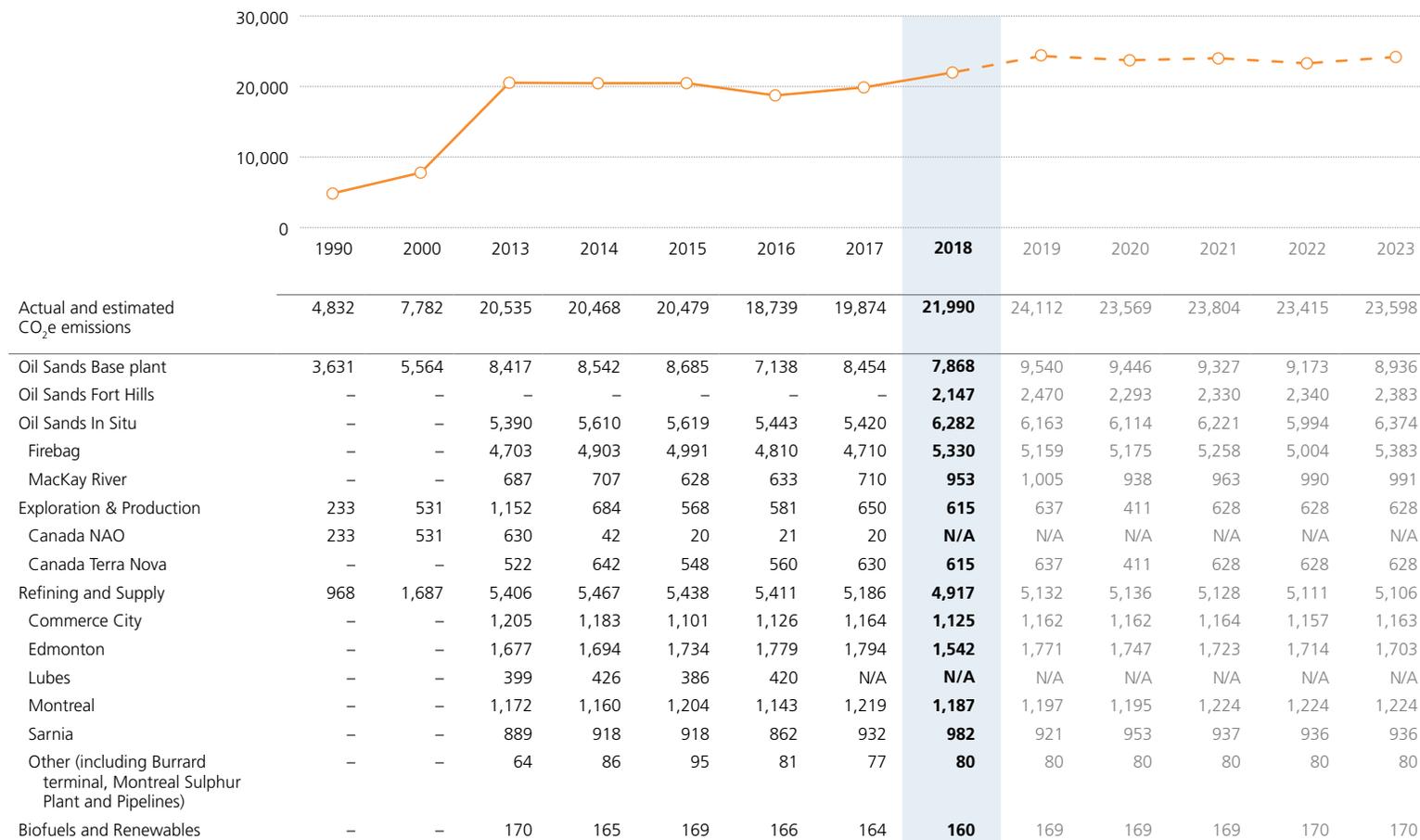
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## SUNCOR-WIDE ABSOLUTE GHG EMISSIONS\*

actual (1990–2018) and estimates (2019–2023)

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

\* 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 to be net neutral with regard to carbon emissions.

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

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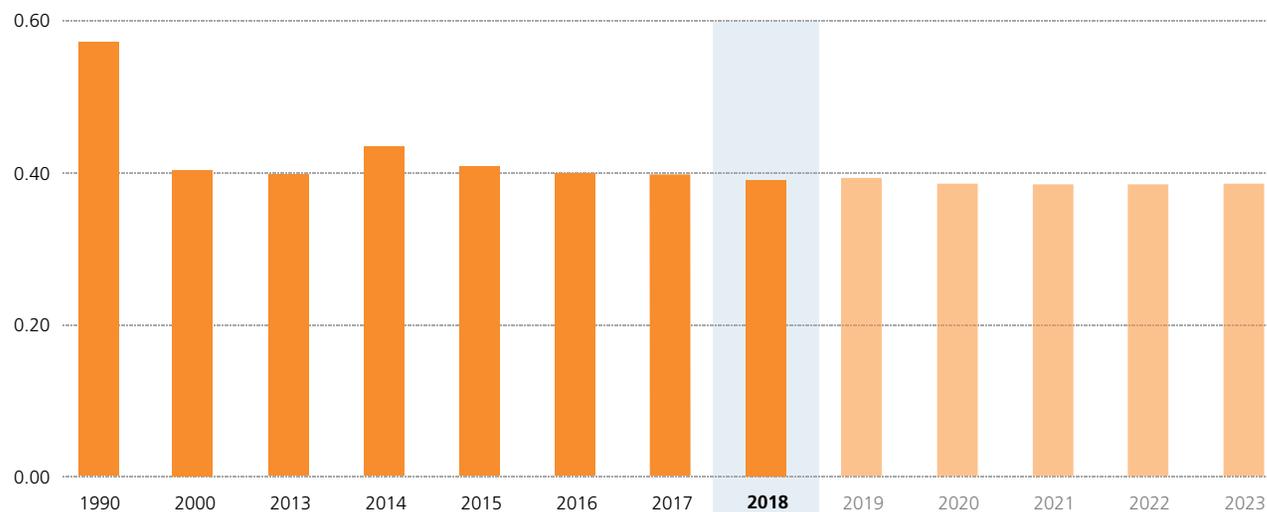
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## SUNCOR-WIDE GHG EMISSIONS INTENSITY\*

actual (1990–2018) and estimates (2019–2023)

tonnes CO<sub>2</sub>e/cubic meters of oil equivalent (m<sup>3</sup>OE)

Actual and estimated CO <sub>2</sub> e emissions intensity	1990	2000	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Oil Sands Base plant	1.196	0.817	0.493	0.489	0.451	0.455	0.443	0.461	0.483	0.480	0.503	0.470	0.434
Oil Sands Fort Hills	–	–	–	–	–	–	–	0.259	0.212	0.197	0.209	0.194	0.198
Oil Sands In Situ	–	–	0.470	0.425	0.389	0.382	0.391	0.401	0.395	0.386	0.392	0.405	0.413
Exploration & Production Canada	–	–	0.154	0.238	0.251	0.278	0.344	0.340	0.387	0.342	0.295	0.378	0.445
Refining and Supply	0.225	0.193	0.200	0.203	0.199	0.201	0.187	0.183	0.184	0.184	0.183	0.183	0.182
Biofuels and Renewables	–	–	0.668	0.654	0.662	0.654	0.657	0.652	0.668	0.664	0.668	0.670	0.672

\* 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 to be net neutral with regard to carbon emissions.

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

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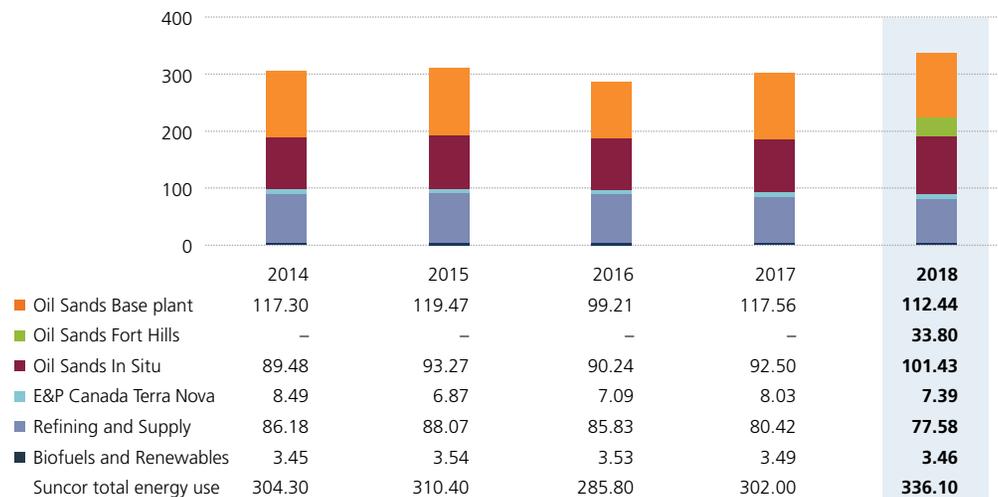
## SUNCOR ENERGY USE AND ENERGY INTENSITY

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 increased in 2018 with the addition of Fort Hills but total intensity remained relatively flat.

### ENERGY USE\*

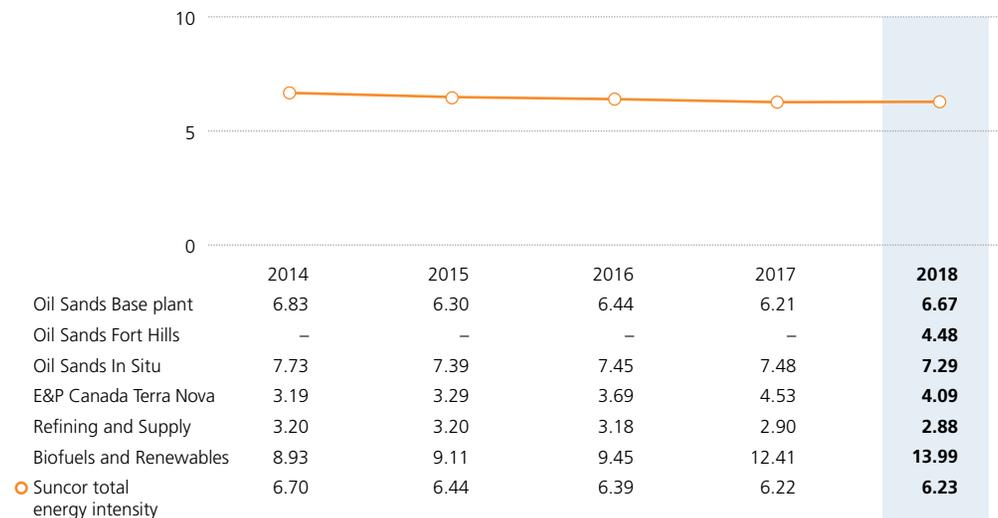
millions of gigajoules



\* For additional information about this chart and its data, please refer to the performance data notes (#6 – notes on energy consumption).

### ENERGY INTENSITY\*

GJ/m<sup>3</sup>



\* For additional information about this chart and its data, please refer to the performance data notes (#6 – notes on energy consumption).

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## PERFORMANCE HIGHLIGHTS

## Oil sands base plant mining

Our Oil Sands base plant upgrader underwent a major maintenance turnaround event in 2018, resulting in lower bitumen production and lower energy efficiency. Due to this event, absolute emissions from our operations were 7% lower at 7.9 million tonnes of CO<sub>2</sub>e but emissions intensity increased by 2% to 0.461 tonnes of CO<sub>2</sub>e per m<sup>3</sup> of oil equivalent over the 2015–2017 average. The higher intensity was partially offset by projects which improved heat integration and energy efficiency.

## Fort Hills mining

Fort Hills saw first oil in January 2018 and successfully ramped up to full operating capacity by the fourth quarter of 2018, with 94% average plant utilization. This new facility added more than 2.1 million tonnes of CO<sub>2</sub>e to our overall GHG emissions. However, the less energy and carbon-intensive extraction process used at Fort Hills removes heavy hydrocarbon molecules to create a lighter, higher quality bitumen that requires less diluent for shipping. As a result, the 2018 GHG intensity of production was 0.262 tonnes of CO<sub>2</sub>e per m<sup>3</sup> of oil equivalent, and full cycle (well-to-wheels) emissions intensity was similar to the average refined barrel in the U.S.\* Fort Hills emissions intensity is expected to drop further with a full-year of steady state operations.

## In situ

The absolute emissions at our steam assisted gravity drainage (SAGD) operations increased 16% year over year to about 6.3 million tonnes of CO<sub>2</sub>e. Following a 2017 turnaround season, our In Situ facilities had higher production volumes as well as increased cogenerated power production for export and thus higher overall emissions. Suncor's In Situ facility intensity was 2% higher at 0.406 tonnes of CO<sub>2</sub>e per m<sup>3</sup> of oil equivalent than the 2015–2017 average. The intensity increase was due to a higher steam-oil-ratio at Firebag in 2018.

## Exploration and production

On the East Coast of Canada, Terra Nova emissions decreased 2% to 0.6 million tonnes CO<sub>2</sub>e in 2018. While the 2018 emissions intensity decreased 5% to 0.340 tonnes of CO<sub>2</sub>e per m<sup>3</sup> of oil equivalent, it is above the 2015–2017 average due to natural production declines. 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 supply

Suncor's Refining and Supply assets saw improved utilization rates in 2018 with the exception of the Edmonton refinery, which had a major turnaround event that impacted its GHG intensity. This was partially offset by plant improvements, including a new process catalyst.

Total GHG emissions at our downstream facilities fell 2% to 5.1 million tonnes of CO<sub>2</sub>e. Emissions intensity held steady at 0.183 tonnes of CO<sub>2</sub>e per m<sup>3</sup> of oil equivalent which is approximately 5% below the 2015–2017 average intensity.

## Renewables and biofuels

Suncor is 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. Performance data is reported for operated wind farms only and is not adjusted to reflect ownership share.

We've been blending ethanol in our retail fuels since 1992 and Suncor's St. Clair ethanol plant is the single largest ethanol production facility in Canada. There were no notable changes in plant performance in 2018. Absolute emissions were 0.162 million tonnes CO<sub>2</sub> and emissions intensity was 0.656 tonnes CO<sub>2</sub>e per m<sup>3</sup> oil equivalent.

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

# INTEGRATING OUR GHG PERFORMANCE GOAL

In 2016, we announced a greenhouse gas goal that we will work to harness technology and innovation to set us on a transformational pathway to a low-carbon energy system. We will measure our progress by reducing the total emissions intensity of the production of our oil and petroleum products by 30% by 2030.



## ENERGY EFFICIENCY AND CONTINUOUS IMPROVEMENT OF OUR BASE ASSETS

We continue to drive energy efficiency at all of our facilities.

- We are implementing new digital technologies such as operation performance management (OPM) dashboards at Firebag to measure, review and make real-time decisions that improve reliability, reduce energy intensity, and lower cost and GHG emissions.
- The design of our new facilities leverages operational experience to significantly lower energy intensity. For example, in addition to using an extraction technology that removes heavy hydrocarbon molecules at the source, Fort Hills design is highly heat integrated through the use of high efficiency cogeneration, recovery of warm process water, and closed loop cooling for enhanced process heat capture.

This ambitious goal, based on a 2014 baseline year, stretches us beyond our current technology and know-how, and ultimately aims to alter the trajectory of our absolute emissions, with the intent to make us a producer of low-carbon intensity crude and refined products. While our goal will be measured by the reduction of our corporate emissions intensity by 30%, the goal is also intended to embed low-carbon thinking into the day-to-day activities and decisions of our employees.

The goal is 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. Operational metrics are part of the corporate scorecard and are critical to meeting the goal. The initiatives required to meet the goal cascade into annual performance targets.

We are targeting emissions reductions in four key areas.

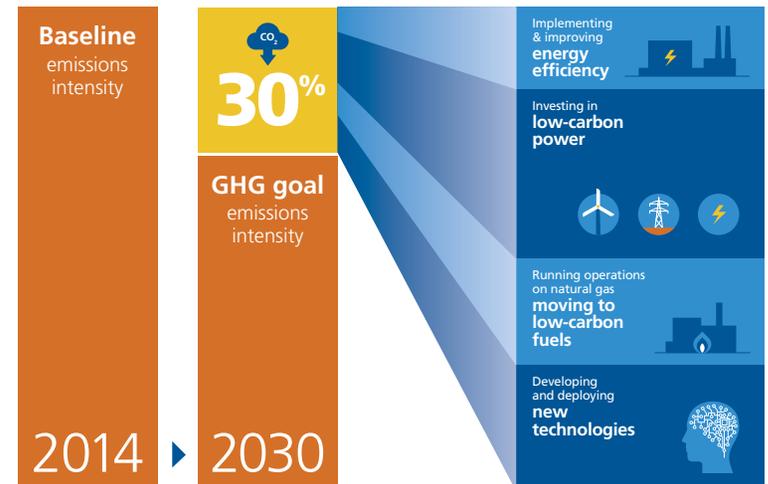


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## INVESTING IN LOW-CARBON POWER

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 of 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 Suncor's cogeneration units is approximately 75% below that of an average coal-fired power plant and 30% below a combined-cycle natural gas facility. The excess power from our cogeneration facilities combined with our wind energy, significantly contribute to reducing the overall GHG intensity of Alberta's electricity grid.
- We are progressing a project to replace the GHG intensive coke-fired boilers with cogeneration or natural gas boilers at our Oil Sands base plant. In addition to providing the facility with steam and hot water needed for our operations, the cogeneration option could export up to 800 MW of low GHG intensity electricity to the provincial grid in Alberta\*.
- In addition to our current partnerships in wind power, we continue to evaluate renewable energy investments that deliver economic, environmental and social benefits. We also are continuing to explore the opportunity to develop our first utility-scale solar photovoltaic facility in Alberta.

## MOVING TO LOW-CARBON FUELS

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

- We are considering fuel switching from high to low carbon sources in our processes such as the proposed coke-fired boiler replacement project at base plant which would replace coke combustion with natural gas.
- We continue to invest in renewable fuels including our 2019 investment in Enerkem Inc. 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.

\* This project has not been sanctioned and is subject to climate policy clarity.

## DEVELOPING AND DEPLOYING NEW TECHNOLOGIES

Our goal will require 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 are participating in the Government of Alberta's research and analysis of a potential bitumen partial upgrading program to improve the GHG profile of oil sands crudes.
- We are amplifying our climate actions through:
  - technology collaboration efforts through Canada's Oil Sands Innovation Alliance (COSIA)
  - focused investments in clean technology funds such as Evok Innovations
  - advancing the work of the Clean Resource Innovation Network (CRIN), an industry-led group created to leverage the oil and gas industry's strengths in large-scale heavy industrial collaboration with the potential to export to other industries globally
- Advancing new in situ extraction technologies that incorporate injected hydrocarbon solvents such as propane or butane that are expected to reduce emissions from in situ facilities.
- Directly investing in technology companies like [Enerkem Inc.](#) and [LanzaTech](#).

In some instances, the development and deployment of these technologies will take us beyond 2030 and we are looking at longer term technology-aspirational goals to motivate decision-making. More details about some of the technologies and innovations we are advancing can be found in the [low-carbon innovation](#) section.

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## 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.
- Lead to additional emissions reductions and will not be met by changing our product sales mix or through acquisition and divestment. 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 will adjust our goal baseline.

To allow us to measure progress against our goal, we have established the following:

### **Suncor tracks the GHG intensity of our production within the facilities we operate**

- The focus of our goal is on the assets we control and operate. As such, we establish the baseline GHG emissions intensity of our operated assets by calculating the direct (Scope 1) and indirect (Scope 2) emissions of our production. This allows us to identify opportunities for our controlled assets to reduce emissions directly in our operations and also for our products to reduce emissions indirectly within the energy system. We continue to promote safe and efficient production in our non-operated assets.

### **Suncor actions and/or investments that reduce emissions outside of operational fence lines will be captured as indirect credits**

- Indirect emissions are not directly emitted by 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 generate for Alberta's electricity grid displaces high-carbon sources of power.

### **The goal will adjust to account for changes in asset mix**

- We have developed a methodology for asset acquisitions or divestitures that does not benefit or hinder our ability to meet our goal.

# LOW-CARBON INNOVATION

New technologies and innovative thinking are fundamental to how we do business. In 2018, we invested approximately \$635 million in technology development and deployment, and digital technologies as part of a robust strategy to optimize current assets and develop next-generation facilities.

## GHG: TECHNOLOGY DEVELOPMENT & DEPLOYMENT

	DISCOVER	DESIGN	DEVELOP	DEPLOY
IN SITU	<ul style="list-style-type: none"> <li>Wellbore technologies</li> <li>Novel subsurface technologies</li> <li>Alternative gas co-injection</li> </ul>	<p><b>Solvent +</b></p> <ul style="list-style-type: none"> <li>Wellbore heating</li> <li>Superheat</li> <li>Electromagnetic (EASE)</li> <li>ESEIEH*</li> </ul>	<ul style="list-style-type: none"> <li>High Temperature Reverse Osmosis Produced Water Treatment</li> <li>In Situ Demonstration Facility</li> </ul>	<p><b>Steam-solvent technologies</b></p> <ul style="list-style-type: none"> <li>ES-SAGD (Expanding Solvent - Steam Assisted Gravity Drainage)</li> <li>Non-condensable gas co-injection pilots (Firebag and MacKay River)</li> </ul> <p><b>Well-bore enhancements</b></p> <ul style="list-style-type: none"> <li>Multilateral well pilot (Firebag)</li> <li>Electric Submersible Pump pilots</li> <li>Flow control devices M-Tool pilot (Firebag)</li> </ul>
MINING		<ul style="list-style-type: none"> <li>Non-Aqueous Extraction</li> </ul>		<ul style="list-style-type: none"> <li>Paraffinic Froth Treatment (PFT)</li> </ul>
UPGRADING & REFINING		<p><b>Partial upgrading</b></p> <ul style="list-style-type: none"> <li>Mild thermal cracker technology</li> <li>De-asphalting</li> </ul>		



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## LOW-CARBON IN SITU PRODUCTION

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 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. We believe the solution will be 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. Some of these technologies could be applied to existing facilities or new growth facilities and, if successful, would significantly reduce our GHG emissions intensity.

These technologies could have a significant impact in the following areas:

- energy use and GHG emissions
- water use and treatment
- land impacts
- production rates and resource recovery
- capital and operating costs
- product quality and value

Suncor works extensively with research organizations and technology providers as well as our own technical experts to identify, evaluate and advance technologies in our Upstream and Downstream operations. Here are some of the technologies we are advancing:

### Solvent+

Suncor is focused on hydrocarbon solvents as an alternative to steam for bitumen production from in situ reservoirs. Suncor's 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 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. Pad-scale demonstration commenced in February 2019 at Firebag and its results will determine the viability of this technology.

Solvent+ and ES-SAGD technologies have the potential added benefit of lowering the carbon composition of the oil through the production process. This raises the value of the oil and reduces the full life-cycle emissions intensity.

### Paraffinic froth treatment

Fort Hills uses a paraffinic froth treatment (PFT) to convert bitumen froth generated in the extraction circuit into an upgrader feedstock. In PFT, we selectively remove the heavy hydrocarbon molecules (the low-value, heavy fraction of the mined bitumen) to create a lighter, higher quality-bitumen that requires less diluent to transport and requires no additional upgrading for the downstream processing. The oil sands is the only place in the world that alters the carbon content of oil at the production source prior to sending to the market.

As a result of this partial decarbonization process, our greenhouse gas emissions for the average barrel extracted at Fort Hills are on par with the average crude refined in the United States\*\* on a full life cycle basis.

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

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

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## LOW-CARBON OIL SANDS MINING TECHNOLOGY

### 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. A demonstration pilot is tentatively planned for 2020.

## LOW-CARBON INNOVATION IN OUR DOWNSTREAM BUSINESS

Since 2006, Suncor has been making a significant impact in Canada's emerging biofuels industry. Our downstream carbon reduction initiatives include alternative fuels, fuel switching, energy efficiency and investing in new technologies including:

- a coast-to-coast level three high-speed direct current electric vehicle charging network spanning more than 50 Petro-Canada stations
- investment in companies focused on biofuel technologies such as [LanzaTech](#) and [Enerkem Inc.](#)
- the largest ethanol plant in Canada which provides the ethanol that we blend into our gasoline as well as research into lower carbon intensity ethanol
- increasing renewable fuel options for our diesel and gasoline blending including investment in hydrotreated renewable diesel (HRD) and fatty acid methyl ester (FAME)

### Collaboration and partnerships

Innovation is a process that is best served by inviting the brightest minds and diverse perspectives to collaborate.

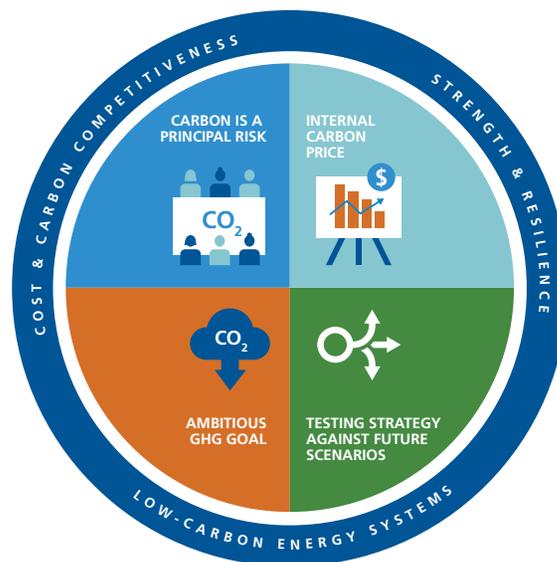
Venture capital funding supports entrepreneurs to advance their ideas to commercialization and build businesses to market their technology worldwide. An example of this is [Evok Innovations](#), a \$100 million technology fund co-founded by the BC Cleantech CEO Alliance, Cenovus Energy Inc. and Suncor. Suncor and Cenovus have each committed up to \$50 million over 10 years to develop technologies to help address some of the most pressing environmental and economic challenges of our industry.

[Canada's Oil Sands Innovation Alliance \(COSIA\)](#) – brings together Canada's largest oil sand producers to pool expertise and intellectual property to accelerate technologies and improve the industry's environmental performance. COSIA's environmental focus areas attract the brightest minds from around the world. The NRG COSIA Carbon XPRIZE is a global competition in which teams from around the world, including Canada, are proving their technologies can be economically scaled up to transform CO<sub>2</sub> into valuable, useful products.

Suncor is an active member of the [Clean Resource Innovation Network \(CRIN\)](#), which aims to position Canada as a global leader in producing clean hydrocarbon energy from source to end use. The network brings together the oil and gas industry, innovators, investors, start-ups, policy-makers, incubators and accelerators, researchers and students. It facilitates the connections to advance technologies for use in Canada and with the potential for export to global markets emphasizing the potential impact that our country can make to help address global challenges.

# CARBON RISK AND ENERGY OUTLOOK

## INTEGRATION OF CARBON RISK INTO OUR DECISION-MAKING PROCESSES



Suncor takes an integrated approach to managing carbon risk and we embed carbon into our decision making processes in multiple ways.

Carbon risk is considered one of Suncor's principal risks. As such, it undergoes a regular Board of Directors review. This includes reviewing external trends, carbon risk pathways, and Suncor's plans to mitigate those risks. Carbon risk is also brought forward to the Environment, Health, Safety and Sustainable Development Committee of the board on a quarterly basis for ongoing oversight.

Each year, as part of our normal integrated business planning process, we develop price assumptions for a variety of economic variables. This includes both base and alternative case carbon prices that take into account existing regulations and the expected trajectory of those regulations as they apply to our assets. These assumptions are used in the evaluation of all business, acquisition, divestiture, capital and strategic planning activities. The alternative case takes a much higher view of future carbon prices and serves as a "stress test" which adds confidence to capital decisions.

In addition to carbon price, other factors such as crude oil price and demand changes over time, are evaluated in business, capital, and strategic planning processes. Each business is required to consider these material factors and demonstrate that it will be able to continue to meet an acceptable rate of return, including funding its sustaining capital and enabling Suncor to maintain and grow its dividend. If the business cannot meet these objectives, it is required to outline the steps needed to achieve this target.

Our internal management model for project and asset development incorporates carbon pricing and our GHG goal prior to a commitment of significant resources, and ensures that all material climate change risks and opportunities are well understood. The process allows for analysis of technical options, but also the regulatory and external stakeholder context to be recognized in decision-making.

At an enterprise-wide level, we use scenario planning to assess the resilience of our business strategy over the long term. We also test our whole portfolio of businesses against our long-term GHG goal to ensure it is achievable.

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## THE ENERGY SYSTEM OF TOMORROW

We are starting to see global efforts to reduce emissions through nationally determined commitments in accordance with the Paris Agreement. Broader technology and policy pathways are necessary to deliver energy to a growing global population, while at the same time mitigating climate change. Limiting emissions will be achieved at an energy system-wide level in the most appropriate way for each region or jurisdiction. There are no single or simple solutions to this challenge.

In our base case energy outlook, we take the following broad trends into consideration:

- Forecasted population growth, the increasing need for energy in developing economies and the aspiration for a better quality of life. As such, we see the global demand for energy increasing steadily. Much of this increase is expected to come from developing countries in Asia, the Middle East, Latin America and Africa.
- We believe decoupling of economic growth and carbon emissions is required to fundamentally change the energy mix.
- National emissions reduction commitments made as part of the Paris Agreement will drive carbon pricing and complementary policy frameworks that are expected to accelerate energy efficiency and emissions reduction technology and incent broader scale adoption of alternative low-carbon energy.
- We expect oil demand will continue to grow until approximately 2040 due to population growth, urbanization and increased living standards, but oil is expected to decline as a percentage of the global energy consumption mix.
- Given natural declines, staying at current production levels, much less meeting increased demand, will require investment in new production from global shale, deep-water and oil sands reserves – a major challenge, given the reduction in capital investment due to depressed commodity prices in recent years.
- We expect supply cost will continue to be moderated by industry efforts to optimize production and invest in technological advances.

## SCENARIO PLANNING

We use three long-term energy futures scenarios to test our business strategy. All of the scenarios are 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 US Energy Information Administration. Meeting that demand at either low, or highly volatile, oil prices will be a challenge.

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. In 2019, Suncor is currently working on the development of a 2°C scenario that we can use to test our business strategy beyond 2040.

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 a number of key dimensions, including climate risk.

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## SCENARIO SUMMARIES\*

**Autonomy**

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

**Summary:**

- 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.
- Break through 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.

\* We used three scenarios defined by IHS Markit as the basis for the development of the Suncor scenarios. The IHS Markit Autonomy, Rivalry and Vertigo scenarios have been modified to fit our unique circumstances/needs.

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**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.

**Summary:**

- 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.

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**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.

**Summary:**

- 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.
- Pipe-line projects constrained by stakeholder protests and investor risk aversion.
- Unstable, boom/bust energy market.
- Environmental progress and climate change mitigation takes 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.

**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. 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:

- the global energy mix shows signs of global demand growth 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 coordination on climate change action

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# RESILIENT STRATEGY

## BUSINESS STRATEGY FOR A CHANGING ENERGY FUTURE

The global oil and gas industry is in the midst of a major structural adjustment due in large part to technology that opened up new oil supply, such as shale oil, and reduced the supply cost curve. As the industry adjusts in an effort to emerge stronger and leaner, a focus on where the industry is headed and the key influencers in both the short and longer term is essential.

### OIL SANDS

Suncor's Oil Sands operations are a concentrated unconventional oil play. Our perspective of the future tells us that now is the time to know where our competitive advantage lies and to play to that advantage.

We have been an operator in the Athabasca oil sands for more than 50 years and the majority of our production comes from the oil sands. There is strategic advantage in having a top-tier resource base of some of the highest-quality reservoirs in the Athabasca oil sands region and substantial scale of physically integrated operations in the region. Furthermore, our largely integrated value chain allows us to extract full value for our resource.

Over the past few years, we have increased facility reliability, resulting in Oil Sands operations cash operating costs falling from \$39.05/bbl in 2011 to \$25.25/bbl in 2018.

Recent market conditions have provided opportunities to assemble a larger base of reserves. Our acquisition in 2018 of an additional 5% equity position in the Syncrude joint operation has increased our ownership to almost 59%. This counter-cyclical investment increases our production at a very attractive cost per flowing barrel relative to a greenfield project of a similar scope and nature.

*By operating multiple, large oil sands facilities in this region, we are able to leverage location and logistics synergies between the facilities, allowing us to drive efficiencies and reliability, and optimizing and reducing environmental impact including greenhouse gas emissions.*

This acquisition increases our exposure to carbon pricing. However, by increasing our position in Syncrude, we have the opportunity to leverage our relationship with an experienced operator with a strong technology program to further advance energy efficiencies at both our base plant and the Syncrude facility.

While often characterized as being the oil basin most vulnerable to a low oil demand scenario, the very long operating life and low decline rate of our assets are, paradoxically, a major advantage under a scenario of either declining demand for crude oil or a correspondingly lower oil price environment. Our long-term reserves base presents minimal finding and exploration costs or risk. The nature of the resource requires high upfront capital investment to develop a project, but once the initial infrastructure is in place, the reservoir can be incrementally developed over a long period of time, without exploration risk, or the high capital requirements of a new project.

Oil sands facilities are more comparable to manufacturing operations. Once operating, they are built to last 40 plus years with a steady output. Production does not rapidly peak and decline, so each new incremental expansion results in production growth. Once high upfront capital costs are depreciated, a facility can continue to operate with low operating costs and sustaining capital requirements while continuing to evaluate energy efficiency opportunities. These characteristics also provide a unique opportunity to advance technologies to reduce emissions given the concentration of assets in the basin.

## TRANSPORTATION FUELS IN A CARBON CONSTRAINED FUTURE

While we expect our upstream crude oil production will continue to supply oil markets, our downstream and marketing business is more exposed to North American refined product supply and demand dynamics.

Governments at all levels in Canada are seeking to diversify transportation fleets to use lower carbon intensity fuels and, as a result, the transportation fueling 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 and because liquid petroleum fuels are available at a relatively low cost and high energy density.

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We see demand for gasoline moderating over the next 10 years, as light vehicle fuel efficiency standards take effect and alternative fuels adoption widens. We see no near-term demand destruction for distillates in North America. In the longer term, we believe diesel will remain the predominant fuel for heavy haulage, aviation, marine and rail, and we see demand growth with increasing economic activity. Heavy-duty vehicle fuel efficiency standards and biodiesel blending are expected to offset some of the economically-driven demand growth.

Enormous strides in fuel efficiency have been made to date through ambitious regulation and by consumer uptake of more efficient light-duty vehicles. Between 2000 and 2010, fleet emissions in Canada decreased from 193 grams per kilometre to 166 g CO<sub>2</sub>e/km, a drop of 14%. As the vehicle fleet continues to turn over in the next decade, fleet average emissions are projected to reach 97 g CO<sub>2</sub>e/km by 2025\*. While it is unclear what course the United States will take on vehicle efficiency standards, there is technical potential to meet even more ambitious fuel efficiency standards. The advances in engine and drivetrain technologies, as well as the development and use of lighter weight materials mean that, on the basis of fuel use per kilometre travelled, the internal combustion engine of the future will, we believe, not only be cost competitive, but also be very carbon competitive with alternative fuels.

In our view, hybrid, plug-in hybrid and electric vehicles are becoming cost-effective additions to the passenger vehicle fleet and will, along with fuel efficiency standards, contribute to moderating growth in long-term global gasoline demand. However, we believe that cost, carbon competitiveness and consumer convenience mean liquid fuels will remain the primary fuel source of vehicle mobility for many years.

Regardless of the external policy environment, Suncor is taking action to reduce the emissions intensity of our liquid fuels in several 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 biocontent to 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 Inc., 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. We also continue to invest in biofuel technology companies such as LanzaTech.

\* <https://www.pollutionprobe.org/pathways-initiative>

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 announced construction in 2019 of a coast-to-coast electric vehicle fast-charging network spanning more than 50 Petro-Canada stations. These sites will provide universal options to charge a variety of electric vehicles and will provide a charging experience that is above the current norm in Canada. We have invested in level three direct current fast chargers, a step change technology that is built beyond the needs of today and positioned for the future of charging in Canada. This exciting initiative will enable us to learn more about this emerging market as we continue to evaluate options and respond to the evolving needs of our customers.

**OFFSHORE OIL PRODUCTION**

Suncor has an interest in every major development 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 have also recently acquired a participating interest in the Fenja development 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 RENEWABLE POWER GENERATION**

Our energy scenarios tell us that a key pathway towards a lower-carbon energy system is to substantially increase cogeneration and renewable power generation capacity and then electrify a greater percentage of the energy system.

Suncor entered the renewable power generation business in 2002. Since then, we have developed eight wind projects totalling 395 MW. Today, we are partners in four operational wind power facilities with a generating capacity of 111 MW. By developing new renewable projects and subsequently selling down our working interest, Suncor is able to generate profitable returns on investment and create cash flow to support further renewable developments. Suncor has a strong portfolio of renewable power development sites across Canada that will further reduce grid intensity in regions like Alberta and Saskatchewan, which have a carbon-intensive grid.

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We are also exploring 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. As part of investment evaluation, we assess economic, environmental and social benefits including Indigenous partnerships in renewables. This activity also generates emission credits that can be used to offset the emissions in our oil sands operations.

The requirement for steam at crude oil extraction, processing and refining facilities creates the opportunity for high-efficiency cogeneration that provides steam and power to our facilities and delivers surplus power to the grid at a carbon intensity lower than any other hydrocarbon-based generation. For an energy system in transition, the value of cogeneration is high; in addition to providing a reliable, low-cost baseload to manage the intermittency of wind and solar power, cogeneration can economically replace coal generation with a much lower carbon intensity power. Suncor currently has cogeneration units installed at its Oil Sands base plant, Firebag and Fort Hills facilities, and exports low-carbon excess electricity generated from these units to the provincial grid.

With both renewable and cogeneration capacity, Suncor provides approximately 900 MW to its own sites and exports approximately 400 MW to the Alberta grid.

As climate regulations are implemented across jurisdictions, renewable power benefits from greater scale which can improve technology, efficiency and improve economics. Equipping wind and solar sites with battery storage to optimize the facility's integration to the power grid could further improve effectiveness. An enabling factor will be market design that allows for dynamic interaction between a renewable, but intermittent, power source and baseload sources like cogeneration.

In 2017, we took the first steps in the regulatory process to potentially 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. Should the project proceed as planned, construction is targeted to begin in 2020, with commissioning of the cogeneration units expected to commence by 2023.

\* This project has not been sanctioned and is subject to, among other items, climate policy clarity.

**ENGAGEMENT WITH OUR SUPPLY CHAIN**

Suncor is also more aggressively integrating sustainability into our supply chain. Through our Supplier Code of Conduct, we are clear that we expect our business associates to be aligned with our sustainable development approach and that we will work together to seek ways to reduce environmental impacts, support the communities in which we work and collectively contribute to economic growth. To that end, we have taken further steps towards engaging with our suppliers on their sustainability performance, including:

- identifying sustainability risks and opportunities in our supply chain
- building collaborative relationships with peers and suppliers
- embedding sustainability into market activities and supply chain management and field logistics culture

One of our first steps was to review our suppliers' available sustainability reports, codes of conduct and CDP responses. We assessed the performance of suppliers that make up the top 50% of our annual spend. Through this assessment, we learned that more than 90% of those suppliers publicly report on sustainability, and 42% report to the CDP.

We also kicked off strategic supplier meetings that included sharing sustainability goals and targets, and how our companies can work together to achieve continuous improvement. This resulted in new prequalification questions that incorporate multiple sustainability factors including GHG performance and goal-setting.

For specific requests for proposal (RFP), we are drafting the next version of our sustainability supplemental questionnaire for all potential suppliers responding to Suncor RFPs. This enhanced supplemental questionnaire is expected to launch later in 2019.

Lastly, as we know collaborative relationships will help us advance sustainable procurement, we are in the planning stages to host a supply chain sustainability forum with suppliers and service providers in the fourth quarter of 2019. This work will enable us to further explore opportunities with current and potential partners and create more environmental and social impact opportunities within Suncor and the market.

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## FACILITY RESILIENCE TO EXTREME WEATHER EVENTS

Suncor assesses specific risks to its physical assets in light of various potential operational hazards to which those assets may be subject, including the risk of extreme weather events, which are possible in the course of operations in the areas where we operate. Suncor manages these risks through facility design and operational procedures. We also maintain, where appropriate, 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 facilities are built to withstand extreme weather events. Prolonged periods of extreme cold could force these facilities to shut down for periods of time to ensure worker safety and prevent undue stress on equipment. Prolonged periods of extreme heat may lead to production cuts if adequate supply of cooling water is not available. Suncor's refineries in Montreal and Sarnia have access to extremely large bodies of cooling water, so are far less exposed to this risk.

### Hurricanes and icebergs

Suncor's Terra Nova installation, off the coast of Newfoundland, operates on the edge of the Atlantic windstorm area, which is subject to hurricanes and icebergs. The risk of hurricane season is managed through a continuous weather tracking service that monitors storm systems in the North Atlantic. There is also a risk in the region of floating icebergs causing damage to our installations. This risk is managed through the design of facilities and a continuous monitoring system tracking iceberg locations. Where the course of an iceberg cannot be altered, an emergency response system allows for the floating platform to be disengaged and moved to safer water, protecting the asset and mitigating environmental risks but resulting in production disruption.

## 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. Limits to oil sands water withdrawal during winter low flow periods are managed through on-site water storage where facility design permits. Our Commerce City refinery is located in a water-stressed region and a potential 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 in which Suncor operates, which we manage through contingency plans to protect facilities that include backup generators and pumps to drain critical operating units and equipment.

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 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.

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# CARBON POLICY AND REGULATION

## CARBON POLICY AND IMPACTS ON SUNCOR

Since the 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 at the same time as meeting the continued rising global demand for energy.

### Canadian federal government

The federal government's *Pan-Canadian – Framework on Clean Growth and Climate Change* requires each province to implement a carbon pricing policy with an overall stringency equivalent to a minimum price of \$20 per tonne in 2019, rising to \$50 per tonne over the next four years. Provinces and territories that do not comply are subject to a federal carbon pricing backstop. Provinces and territories that volunteered to accept the federal plan may use the revenue as necessary for the unique circumstances of their region, including protecting carbon-intensive, trade-exposed industries. Involuntary provinces with policies that were viewed to be inadequate are subject to the federal backstop. In these jurisdictions, carbon revenues are generally collected from two streams:

- a consumer-facing carbon tax on all fossil fuels where the majority of the carbon revenues collected are returned to their citizens in the form of a rebate, not their provincial governments
- to protect the competitiveness of the industrial sector, an output-based pricing system for industrial facilities that emit above 50 kt CO<sub>2</sub>e or more per year, with the ability to opt-in for smaller facilities

The federal government is consulting with industry on how best to use the carbon revenues to help industry reduce their emissions.

### Impact of Canadian climate change regulations

Our carbon price outlook assumes the current carbon price will rise to \$100 per tonne on an increasing percentage of our emissions, by 2040. As most of our facilities are currently regulated under various carbon pricing regimes, the impact of our outlook is built into our planning assumptions.

Based on the outlook for new emissions regulations, we have updated our cost estimates. The production weighted average after-tax cash cost per barrel of global production over the period 2019 to 2028 has increased from 2018 and is now estimated at an average of \$0.70 per barrel.\*

### Alberta

In April 2019, Alberta elected a new provincial government that has eliminated the consumer portion of Alberta's carbon tax and reduced overall tax on industry. However, for the remainder of 2019, Alberta's industries will continue to be regulated under the Carbon Competitiveness Incentive Regulation (CCIR) at the current economy-wide price of \$30 per tonne. Starting in 2020, Alberta industries will be regulated under a yet-to-be-developed Technology Innovation and Emission Reduction Fund program (TIER). The construct of the TIER is expected to be modelled after the previous Specified Gas Emitters Regulation (SGER) that was in place from 2007 to 2017. Similar to the SGER, the TIER will apply to facilities that emit greater than 100,000 tonnes of carbon dioxide (or equivalent) per year. It will require carbon emissions intensity reductions from industrial operations by 10% per year relative to a historical baseline. Electricity generators will be required to meet a "good as best gas" output based standard similar to the current CCIR. Regardless of the methodology (i.e. SGER, CCIR or TIER) Suncor continues to support carbon pricing policies designed to mitigate the competitiveness impact on trade exposed sectors like oil and gas, while continuing to accelerate emissions performance improvements. Given that there is no universal approach to carbon pricing around the globe, we recognize that leading policy includes a carbon price.

The *Oil Sands Emissions Limit Act* includes a precedent-setting 100 Mt emissions limit\*\* 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.

\* Regulatory changes in 2018-19 contributed to the modified cost per barrel. Additional information on the Output Based Allocation for Upgrading under Alberta's Carbon Competitiveness Incentive Regulation (CCIR) was the largest contributor to the year-over-year changes. Carbon emissions policy development remains in flux with a high degree of uncertainty.

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

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In June 2018, Ontario withdrew its participation in the WCI cap-and-trade program in favour of introducing its own Emission Performance System intended to meet the overall stringency of the federal backstop. In the interim, Ontario has become an involuntary province subject to the Federal backstop. Suncor's Sarnia refinery and St. Clair ethanol plant are both regulated facilities under the Federal out-based pricing system (OBPS) and free emission receive emissions allowances, a measure intended to maintain sector competitiveness. Suncor will work with the provincial government to explore solutions that achieve the required outcomes.

**Quebec**

Suncor's refinery in Quebec is regulated under a cap-and-trade program linked to the Western Climate Initiative (WCI). Regulated refining facilities receive an allowance allocation that aligns with a benchmark performance and takes into account competitiveness in a trade-exposed context. Fuel suppliers are required to purchase allowances to cover the tailpipe emissions of all fuel sold, the cost of which is expected to be largely passed to the consumer, thus acting as a carbon price on fuel consumption.

**Transportation fuel policies in Canada**

Transportation emissions are approximately 25% of total emissions in Canada. 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.

In addition, the federal government has recently proposed implementing a national Clean Fuels Standard, which remains under development.

**U.S. GHG regulations**

The U.S. Environmental Protection Agency (U.S. EPA) has established a rule mandating that all large facilities (defined as facilities emitting greater than 25,000 tonnes of CO<sub>2</sub>e per year, which includes Suncor's refinery in Commerce City, Colorado) must report their GHG emissions. The mandate of the U.S. EPA is under review by the current administration. In June 2017, the withdrawal of the U.S. from the Paris Agreement was announced. The current administration has also overturned a number of decisions made by the previous administration. Efforts have also been made at the state level to adopt legislation requiring entities to report on GHG emissions. 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, Colorado refinery, is unknown at the time of publication.

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## ENVIRONMENT

Our core mission is to be trusted stewards of valuable natural resources. Guided by our Environment, Health and Safety Policy and through operational excellence and bold innovation, we strive to manage and minimize impacts on the environment and improve performance.

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# AIR QUALITY

Suncor works to reduce air emissions from our operations. Our focus for air quality management is centered on air emissions (pollutants and greenhouse gases) and odours, and we are committed to maintaining and improving air quality near all of our operations.

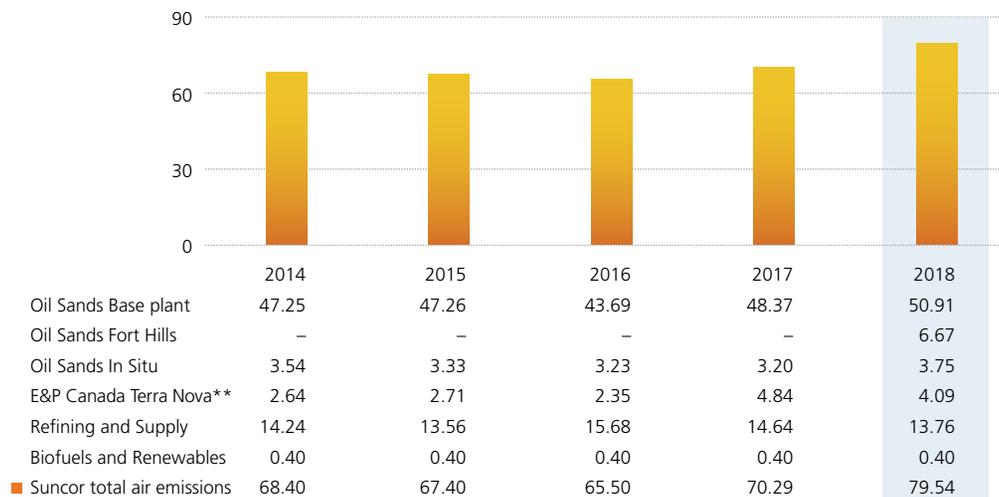
Our Annual Air Pollutant and Greenhouse Gas Emissions Reporting Standard provides a structured mandatory process for continual improvement of emissions reporting processes.

In 2018, total Suncor-wide absolute air emissions (nitrogen oxides, sulphur dioxide and volatile organic compounds) increased by approximately 13% compared to 2017. This increase is primarily attributed to the commissioning and ramp-up of the Fort Hills project.



## AIR EMISSIONS\*

thousands tonnes/year

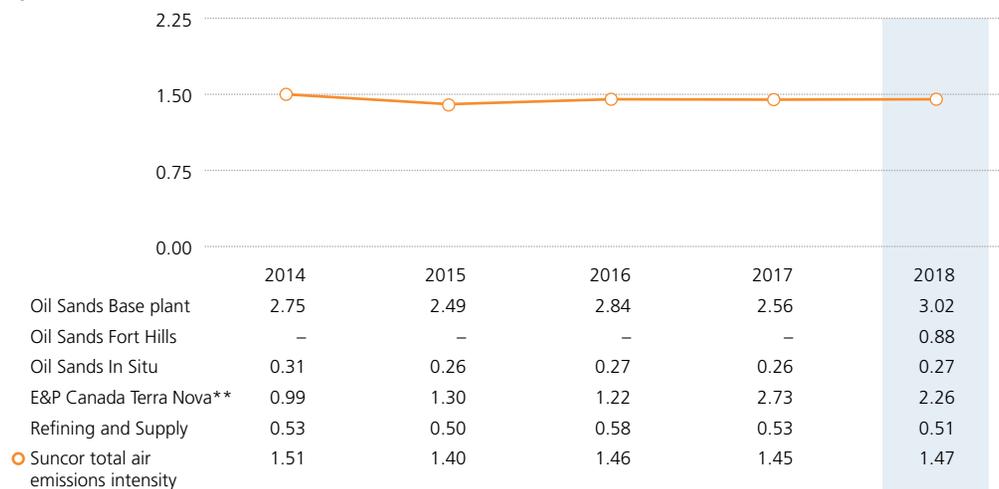


\* Air emissions include SO<sub>2</sub>, NO<sub>x</sub> and VOC emissions. For additional notes regarding this chart and its data, please refer to performance data notes (#7 – notes on other air emissions).

\*\* The increase in Terra Nova's VOC emissions and emissions intensity was due to the hydrocarbon blanket gas and recovery system being offline for a large part of 2017 and 2018 when compared to ~100% operational in 2016.

## AIR EMISSIONS INTENSITY\*

kg/m<sup>3</sup>



\* Air emissions include SO<sub>2</sub>, NO<sub>x</sub> and VOC emissions. For additional information about this chart and its data, please refer to performance data notes (#7 – notes on other air emissions).

\*\* The increase in Terra Nova's VOC emissions and emissions intensity was due to the hydrocarbon blanket gas and recovery system being offline for a large part of 2017 and 2018 when compared to ~100% operational in 2016.

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## SULPHUR DIOXIDE

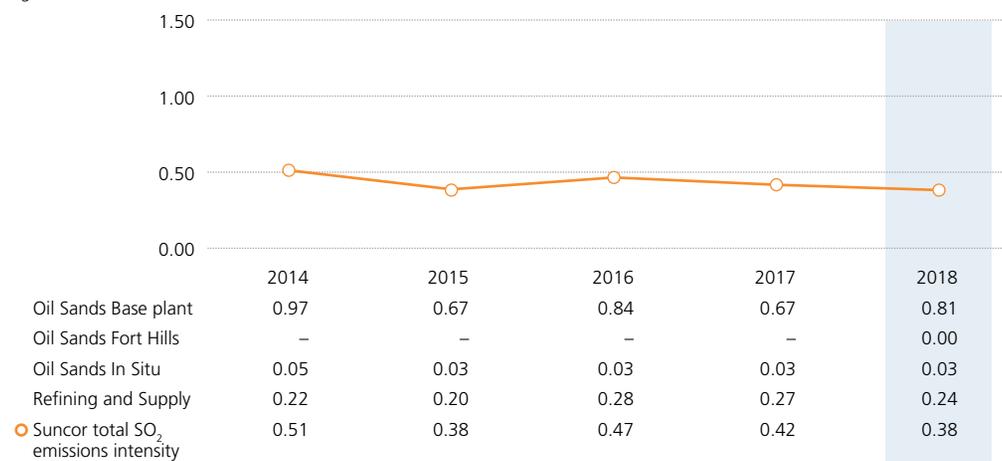
Over the last five years, there is an overall downward trend in sulphur dioxide (SO<sub>2</sub>) emissions intensity. This trend is due to reliable operations, fewer plant upsets and increased use of alternative fuels in place of petroleum coke. Preventative maintenance on SO<sub>2</sub> scrubbers caused the annual fluctuations in intensity trends.

The approximately 10% decrease in SO<sub>2</sub> emission intensity in 2018 is due to increased production from upstream facilities, including Fort Hills.

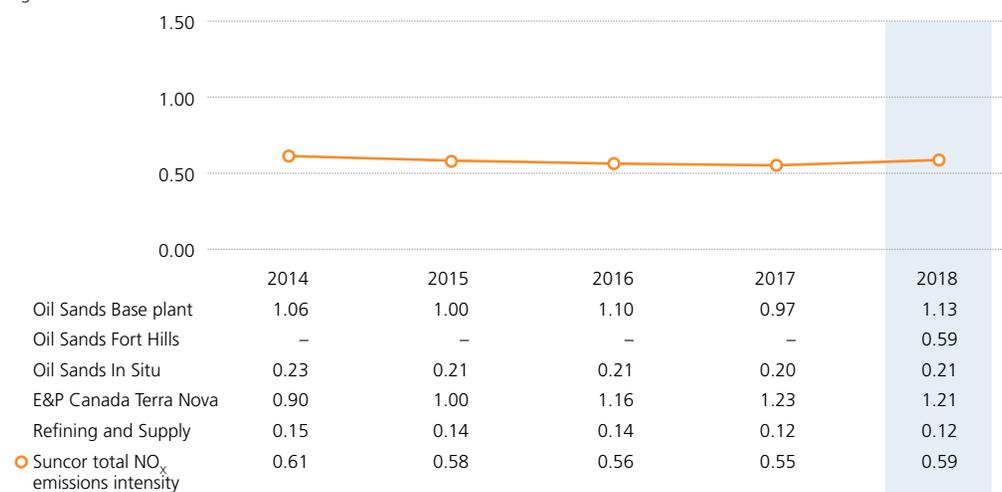
## NITROGEN OXIDES

The overall trend in nitrogen oxide (NO<sub>x</sub>) emissions intensity over last five years, is relatively stable.

The increase in NO<sub>x</sub> emissions intensity in 2018 is primarily due to the ramp-up of Fort Hills, and increased production at our in situ sites, Firebag and MacKay River.

SO<sub>2</sub> EMISSIONS INTENSITY\*kg/m<sup>3</sup>

\* For additional information about this chart and its data, please refer to performance data notes (#7 – notes on other air emissions).

NO<sub>x</sub> EMISSIONS INTENSITY\*kg/m<sup>3</sup>

\* For additional information about this chart and its data, please refer to performance data notes (#7 – notes on other air emissions).

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## VOLATILE ORGANIC COMPOUNDS

Volatile organic compound (VOC) emissions intensity is stable for our in situ, and refining and supply businesses. There is an increasing VOC trend for oil sands due to changing methodology of measuring emissions across our oil sands mining operations. The main contributor to the increase in VOC emission intensity is due to Fort Hills coming online.

The considerable fluctuation within our Terra Nova operations is due to a hydrocarbon blanket gas and recovery system being offline due to an unplanned outage and maintenance.

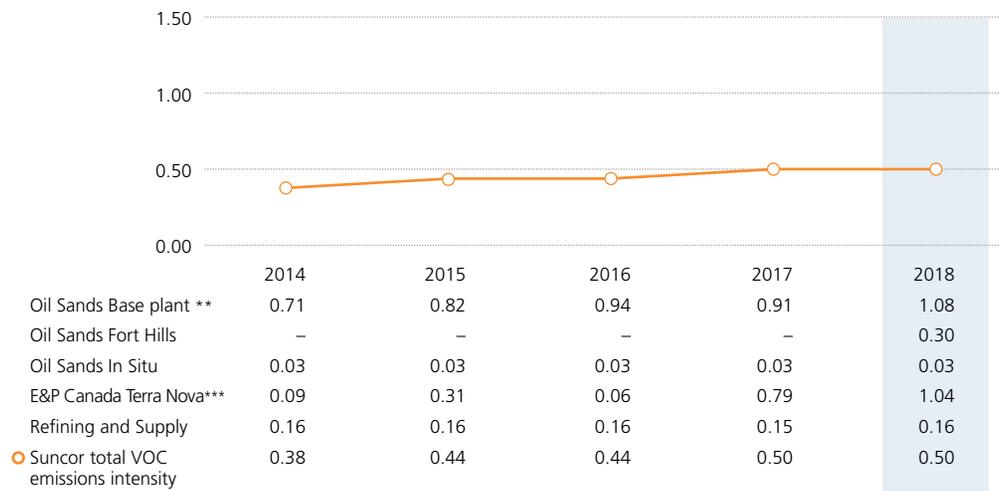
## AIR QUALITY MONITORING

Suncor is a member of the Wood Buffalo Environmental Association (WBEA). The WBEA operates environmental monitoring programs to monitor ambient air, land and human exposure in the Regional Municipality of Wood Buffalo (RMWB) in northeast Alberta – providing ambient air quality data and a real-time air quality index (updated hourly) which is available to the public.

We also support air monitoring via the following airsheds/organizations that monitor and report air quality – ensuring timely availability of results to the public and regulatory agencies:

## VOC EMISSIONS INTENSITY\*

kg/m<sup>3</sup>



\* For additional information about this chart and its data, please refer to performance data notes (#7 – notes on other air emissions).

\*\* Oil Sands Base estimation accuracy is greater than +/- 10% and limited by currently accepted methodology and measurement instruments.

\*\*\* The increase in Terra Nova's VOC emissions and emissions intensity was due to the hydrocarbon blanket gas and recovery system being offline for a large part of 2017 and 2018 when compared to ~ 100% operational in 2016. It is noted that there was an error in total VOCs reported for Terra Nova in the 2018 report. The miscalculation that occurred in the storage and handling of emissions is now corrected & reported in this 2019 report.

### Alberta

- Parkland Airshed Management Zone
- Alberta Capital Airshed, through involvement in the Strathcona Industrial Association
- Alberta Clean Air Strategic Alliance
- Environmental Monitoring and Science Division (EMSD) of Alberta Environment and Parks

### Ontario

- Clarkson Airshed Study, through participation in the Clarkson Airshed Industrial Association
- Sarnia Lambton Environmental Association

### Montreal

- We work with the Service de l'environnement de la ville de Montréal by providing ambient air quality monitoring data

## ODOUR MONITORING IN THE RMWB

Suncor consistently engages with community stakeholders, government and other external agencies on odours, to discuss best practices and odour management strategies – and regularly organizes meetings between industry and community members to discuss their concerns. We're also engaged in researching and testing new methods and technologies to monitor fugitive emissions.

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# WATER PERFORMANCE AND STEWARDSHIP

Suncor is committed to the responsible development of the oil sands. How we manage water is critical to us as a company, to neighbouring Indigenous communities and to our stakeholders – it's also crucial to achieve our vision and commitments for faster reclamation and mine closure.

Our use of water is guided by water stewardship principles that focus on:

- water conservation
- reuse and recycle
- return of treated wastewater to the watershed

We continue to invest in water treatment research and development, including participating in industry collaboration, academic research and piloting new technology.

Suncor also plans on extending our commitment to water stewardship by setting a new long-term water goal. This builds on learnings from our previous water goal, the success of our water-management strategy and input from Indigenous communities. Our expectation is that the new goal will reflect our water requirements and the need to maintain healthy, clean watersheds.

*“Water management is essential to our operations and the well-being of our environment, so we’re taking steps to steward sustainable water practices in our business.”*

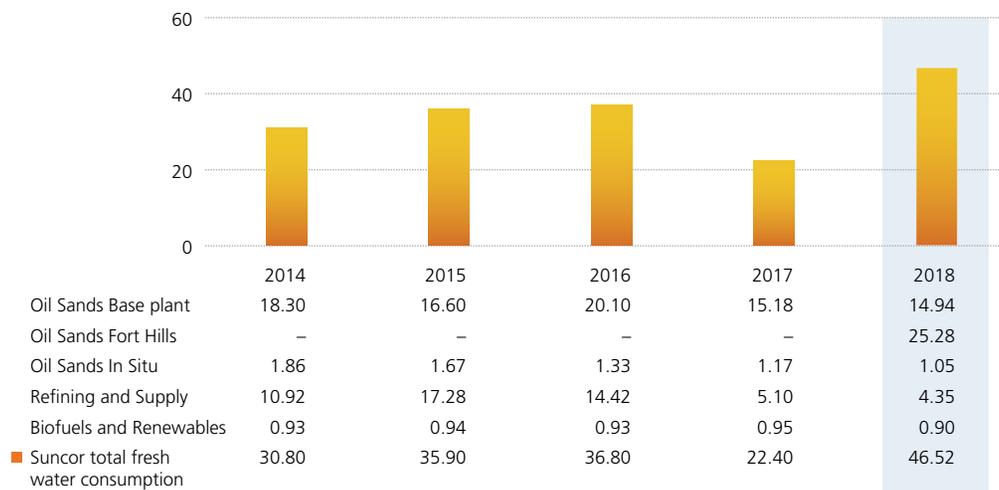
– Anita Selinger, specialist, water treatment

## 2018 SUNCOR FRESH WATER USE AND INTENSITY

In 2018, our fresh water consumption was 46.52 million m<sup>3</sup>. This increase can be attributed to the Fort Hills start up. At our oil sands Base plant we continue to optimize wastewater recycle rates to decrease fresh water withdrawal from the Athabasca River.

### FRESH WATER CONSUMPTION\*

million m<sup>3</sup>



\* For additional information about this chart and its data, please refer to performance data notes (#8 – notes on water use and return).

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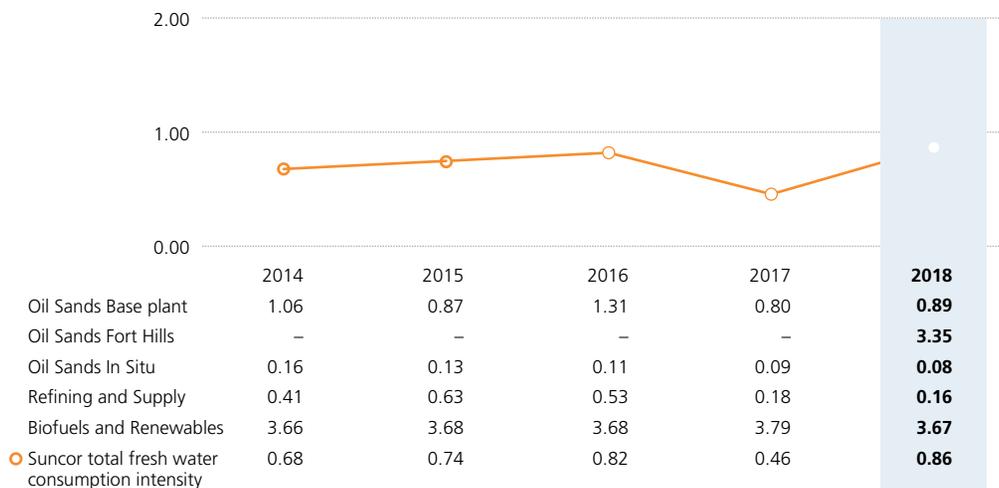
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FRESH WATER CONSUMPTION INTENSITY\*

m<sup>3</sup>/m<sup>3</sup>



\* For additional information about this chart and its data, please refer to performance data notes (#8 – notes on water use and return).

WATER STEWARDSHIP HIGHLIGHTS

Water conservation

Mining and extraction

Our oil sands Base plant is licensed to withdraw up to 59.8 million m<sup>3</sup> of water annually from the Athabasca River – about 0.3% of the river’s annual average flow. We continue to operate well below our water license, withdrawing less water than we’re licensed to do so, even as our production levels increase.

We have a separate water license allocation of up to 39.3 million m<sup>3</sup> of river water annually for the Fort Hills project. Fort Hills fresh water consumption intensity is high due to ramp-up of the site. Fort Hills is building up water inventory for recycling. As we better understand our operational water use and efficiency at Fort Hills, we will continue to explore opportunities to further reduce water use. Taken together, the Base plant and Fort Hills allocations represent about 0.5% of the Athabasca River’s annual average flow.

East Coast Canada

The only fresh water consumed in our offshore operations is for cooking, drinking, showers and other domestic purposes. In our East Coast Canada operations, water is either produced offshore through desalination, or is transferred via vessel from St. John’s, Newfoundland.

Reuse and recycling

Mining and extraction

The first major phase of our oil sands water strategy involves sending treated tailings water from our oil sands Base plant to our in situ water network. There, the tailings water is used as a make-up water supply. The result is a system designed to allow up to 10,000 m<sup>3</sup> (or four Olympic-sized swimming pools) of tailings water per day, to be used as in situ make-up water, instead of being stored in our tailings ponds. Since 2010, we have reused 10.7 million m<sup>3</sup> of tailings water in our in situ facility.

Over the last few years, we have also seen a reduction in fresh water use at our oil sands Base plant due to optimizing wastewater recycle, and return to the environment. Approximately 88% of the water used by our mining and extraction operations in 2018 was recycled tailings water.

In situ

At our Firebag in situ site, approximately 96% of the water used is recycled. The make-up is drawn from recycled wastewater from our oil sands upgrading and utilities operations, surface run-off water collected within the facility boundary and from groundwater wells.

While at our MacKay River in situ facility, close to 100% of the water is recycled and MacKay River has zero liquid discharge. The majority of make-up water comes from groundwater, and it’s important to note most of this water is too high in salt and mineral content to be used for potable water or agriculture.

Downstream

Our refineries use fresh water for heating and cooling. While water use has remained relatively flat, there have been local initiatives that have resulted in more efficient water use.

At our Edmonton refinery, approximately 33% of the total water withdrawn in 2018 was recycled wastewater supplied from the municipal Gold Bar Wastewater Treatment Plant – significantly reducing the amount of fresh water withdrawn from the North Saskatchewan River.

Suncor’s Commerce City refinery uses both city water and collected groundwater for steam production and cooling, as well as to wash out the natural contaminants in crude oil, like salts and minerals, to prevent corrosion in our processing units. Much of this water is recycled for reuse at our facility, and the remaining portion is treated and discharged to a local waterway, Sand Creek, under a permit issued by the Colorado Department of Public Health and Environment.

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## RETURN OF TREATED WATER TO WATERSHED

The primary source for make-up water for our mining and extraction operations is the Athabasca River. In 2018, our oil sands Base plant withdrew about 15.7 million m<sup>3</sup> of water from the Athabasca River, while returning 2.2 million m<sup>3</sup> of treated water back into the river.

As part of our mine closure plan, we are currently investigating ways to safely return treated tailings water to the environment. We are piloting this through our [demonstration pit lake \(DPL\)](#) – now known as **Lake Miwasin** – using a closed loop system where we maintain control of the water over a number of years and once it meets regulatory criteria, and upon government approval, expect to allow water from Lake Miwasin to be naturally released to the environment.

The DPL is part of our aquatic closure technology development program, designed to ensure we can successfully reclaim mine sites. The DPL project incorporated the [permanent aquatic storage structure \(PASS\)](#) fluid tailings treatment process as the first step to accelerating the process, to establish a lake capable of supporting a full ecosystem of aquatic life. An aquatic cover will now be established on the treated tailings and operated in the same way that is planned for the full-scale closure drainage system.

Pit lakes are a necessary part of successful closure and reclamation plans, and are considered a best practice in mining industries around the world. There are a number of pit lakes in Alberta that were created from former coal mine pits, which are now used for recreational fishing, swimming and continue to demonstrate naturally colonized fish and staging areas for migratory birds. The additional research and understanding derived from this work is expected to help ensure the oil sands pit lakes are viable features in the closure landscape.

## RESEARCH AND DEVELOPMENT

As Suncor continues to lead and innovate in water treatment, we share the lessons learned and technologies with our industry peers, through [Canada's Oil Sands Innovation Alliance \(COSIA\)](#). By doing so, we are confident we can reduce the regional, operational footprint and better protect natural water resources.

### Water Technology Development Centre (WTDC)

The **Water Technology Development Centre (WTDC)** is an example of our industry collaboration. The \$145 million WTDC, attached to Suncor's Firebag Steam Assisted Gravity Drainage (SAGD) central processing facility is now operational.

Suncor and its partners will use the facility to test multiple water technologies concurrently, enabling the partners to conduct more pilots than each could on their own, while sharing the risks and costs. This will allow operators to speed the development and implementation of new water treatment technologies, ultimately shortening the current eight-year time frame required to field test technologies and move them to commercial application.

*“The WTDC allows the partner companies to test more technologies than each could on their own, while sharing the risks and costs of development.”*

– Brad Sobey, manager operations  
technology development

In May 2019, Suncor was named [JWN Energy Excellence Awards](#) champion in the Operational and Project Excellence – Oil Sands Category for the Water Technology Development Centre.

### High temperature reverse osmosis produced water treatment

Suncor has partnered with Devon Energy and Suez Water Technologies and Solutions, with funding support from Emissions Reductions Alberta (ERA), in a project that develops **high temperature reverse osmosis (HTRO)** membranes suited for SAGD treatment conditions. If successful, a high temperature membrane plant could reduce the energy required and infrastructure for the SAGD water treatment process.

### Commerce City wastewater treatment facility

In 2017, our Commerce City refinery operationalized a \$65 million upgrade to our existing [wastewater treatment facility](#), leveraging a technology called membrane ultrafiltration to treat and filter the water. The facility is one of the first in North America to use this technology in treating refinery wastewater streams.

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Up close view of oil sands tailings management technology, TRO™.

## TAILINGS MANAGEMENT

Tailings are a mixture of water, sand, clay and residual hydrocarbon, and are the by-product of the hot water extraction process used to separate the oil from the sand and clay. Tailings are stored in engineered dam systems called tailings ponds, designed to settle out the solid particles from the water.

Water is continuously recycled from the tailings ponds back into the extraction process, reducing withdrawal of fresh water from the Athabasca River and other sources. Although sand separates quickly from the tailings, smaller particles of clay and silt remain in suspension and form fluid tailings which in the past could take decades to separate.

New technologies are accelerating the separation process. Over the past several years, Suncor's holistic TRO™\* approach has allowed us to:

- reclaim a tailings pond, [Wapisiw Lookout](#)
- make another one trafficable through the use of coke capping technology
- convert a third tailings pond to a fluid tailings treatment area

Fluid tailings treatment capacity was increased in 2018 by commercially implementing our permanent aquatic storage structure (PASS) fluid tailings treatment process. This has allowed for a significant reduction in untreated fluid tailings inventory at Base plant operations. Additionally, in the next few years, another tailings pond will be removed from Base plant operations because of our [PASS technology](#).

*“As a result of what we’ve heard and learned, our approach to tailings management has evolved over the years and it will continue to evolve in the future.”*

– Blair Penner, director, EH&S Regulatory Mining, Extraction & Upgrading

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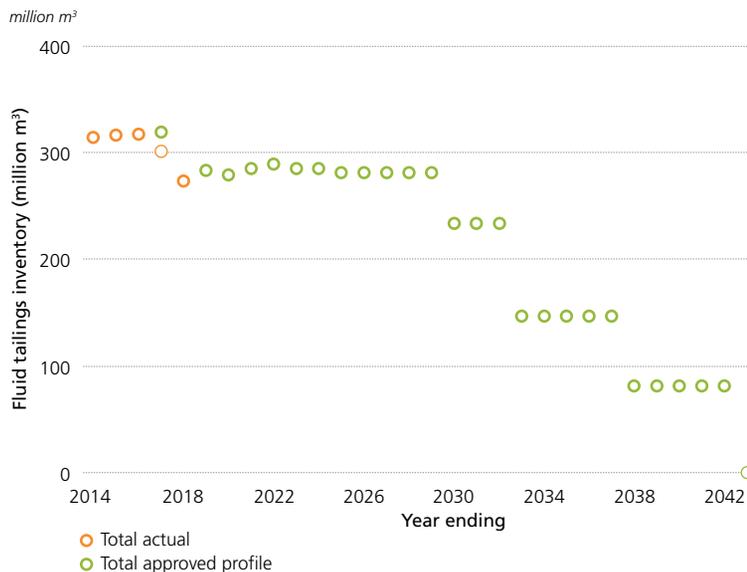
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## BASE PLANT

As our mining operations have expanded, the volume of fluid tailings has increased. However, with the implementation of TRO™\* in 2010, fluid tailings volumes at site have remained steady and we're now working to decrease the inventory. Suncor currently has about 300 million cubic metres of fluid tailings.

## TAILINGS



At the end of the 2018 reporting period Base plant had 273 million m<sup>3</sup> of untreated fluid tailings, which is 37 million m<sup>3</sup> below the approved FT profile. Base plant also had 119 million m<sup>3</sup> of water stored for recycling in our tailings facilities.

## FORT HILLS

Fort Hills, operated by Suncor, ramped up earlier than anticipated and started producing bitumen in 2018, achieving average utilization of 94% in the fourth quarter of the year. Suncor is treating fluid tailings from the start of operations with extraction thickeners and enhanced beach capture to reduce the amount of fluid tailings and minimize further treatment requirements.

Fort Hills tailings operations feature an out-of-pit tailings area with plans to transition to below-grade tailings treatment once space is made available in the first mining area. The peak fluid tailings inventory at Fort Hills is expected to be below 130 million m<sup>3</sup>. This represents a significant change in fluid tailings management compared to industry demonstrated inventories.

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As a new mine in the oil sands region, the project has the opportunity to apply the knowledge acquired from past mining, tailings and reclamation operations while not being burdened by legacy constraints.

*Through shared research, experience, expertise and financial commitments, we are able to investigate new tailings technologies faster. We anticipate this resource-sharing through COSIA will improve tailings management now and at future oil sands mine operations.*

## TAILINGS DIRECTIVE

To ensure fluid tailings volumes are managed appropriately, the Government of Alberta released the Tailings Management Framework in 2015, which is intended to ensure fluid tailings are in a ready-to-reclaim state within 10 years of the end-of-mine life.

In 2017, the Alberta Energy Regulator (AER) finalized a new oil sands directive called the [Fluid Tailings Management for Oil Sands Mining Projects](#) (Directive 085). This regulation includes tailings management plan application and tailings performance reporting requirements aligned with the government's Tailings Management Framework.

In 2015 and 2016, Suncor was invited to work with Indigenous communities, the AER and other stakeholders to support the development of Directive 085.

To meet the new requirements, Suncor requested permission and received approval in 2017 to add treatment capacity to our TRO™ operations at Base plant. Meanwhile, Fort Hills received approval in 2019. Both updated plans are based on what we've learned through our implementation of TRO™ and from members of [Canada's Oil Sands Innovation Alliance](#) (COSIA).

## RAISING THE BAR: TAILINGS COLLABORATION

As a member of COSIA, Suncor is sharing details of our tailings technologies with other member companies. In return, we are given access to technologies that others are using to manage their tailings. Highlights in 2018 included:

- 17 new projects started
- 189 contributed technologies
- 77 active projects, with a cost of approximately \$260 million

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Suncor is working to reduce the size of our environmental footprint. Tailings reclamation is a story of ongoing collaboration, learning and innovation.



**Tailings first placed in Pond 1 (now Wapisiw Lookout, surface reclaimed in 2010)**



**Pioneered TRO™**

Involves sand dumps, fluid transfer and storage systems and dedicated disposal areas to treat & dewater fluid tailings using a flocculant.

**Lake Miwasin**

Lake Miwasin, previously known as demonstration pit lake (DPL), is part of our closure technology development program that is designed to ensure we can successfully reclaim mine sites. This project employed the PASS fluid tailings treatment technology as the first step to establish a lake capable of supporting a full ecosystem of aquatic life.



**Consolidated Tailings Technology**

Involves the addition of sand and coagulant to capture fluid tailings.

Proved ineffective for our current mines due to material requirements.

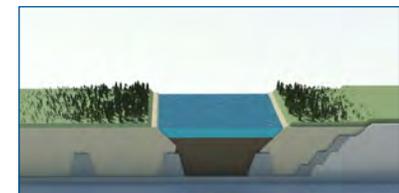
**Fluid Tailings Treatment (DDAs and coke capping)**

Builds on TRO™\*, with dedicated disposal areas (DDAs) and placement of petcoke for surface access to install wick drains that dewater the tailings.



**Permanent Aquatic Storage Structure (PASS) Process**

Builds on TRO™ with same components. Treat with flocculant and addition of a coagulant to improve water quality. Increases speed of processing fluid tailings and reclamation timing.



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## COKE CAPPING TECHNOLOGY

Thanks to breakthroughs that have come from research and development, Suncor continues to make progress in tailings management. Following the surface reclamation of Pond 1 (now known as Wapisiw Lookout) in 2010, we began creating a trafficable surface on Pond 5, with a reclamation technique called coke capping. Thanks to teamwork and dedication, Pond 5 can now support heavy equipment – more than two years ahead of what we had planned.

The coke capping technology we developed and commercially deployed at Pond 5 involves placing a geofabric/geogrid on a tailings pond and then placing petroleum coke (a byproduct of upgraded bitumen) to create a solid surface. Giant straws, called vertical strip drains, are added to dewater the fluid tailings. In the future, we will spread sand over the coke to allow placement of a soil cover and vegetation (trees and shrubs). This is the first full-scale soft tailings cap of its kind in the industry.

Originally, Suncor anticipated completing the cap on Pond 5 in 2019. However, based on how well the dewatering had already progressed, an opportunity to mobilize a team to install the rest of the cap allowed for the pond to be fully trafficable in 2017.

Now that the cap is complete, settlement will continue and Suncor will work to understand how to apply this technology to further improve our operations. In addition, we will share our lessons learned with other oil sands operators through COSIA.

## DAM SAFETY

Suncor manages a robust dam safety program, protecting the integrity of tailings dam structures through extensive checks and balances for design, construction and monitoring, including a series of internal and external reviews.

We employ specialized experienced engineers, referred to as geotechnical engineers of record, for each tailings facility and/or dam structure. These individuals are qualified to lead the design work of each area, and work in collaboration with internationally experienced design consultants, referred to as geotechnical designers of record.

In addition to using these experts, an independent external review board called the Mine Development and Reclamation Review Board (MDDRB) reviews and critiques ongoing design work several times a year. The review board is comprised of internationally recognized experts in their field. The board also reviews our annual performance report for each of our operating ponds and associated dams. Lastly, designs must be approved and licensed by dam safety engineers at the Alberta Energy Regulator in accordance with [Alberta's Dam & Canal Safety Directive](#).

Once designs are approved, we exercise caution during construction by ensuring our facilities are constructed in ways that strictly adhere to the appropriate design specifications. This is completed through administering Suncor's Resident Engineers Quality Assurance Program, which monitors and provides technical oversight during construction.

In addition, Suncor's Dam Safety Engineer has technical oversight of the performance of all dams during and after construction. Geotechnical instruments are placed in the structures at strategic depths and locations during the construction and operating phases to monitor facility health. We use the data we obtain to monitor the integrity of the structures during all phases of the tailings facility lifecycle.

Suncor's tailings facilities are actively operated and monitored as part of a disciplined tailings facility management system. In addition, Suncor's supporting Dam Safety Management System incorporates continuous monitoring, rigorous third-party reviews, government inspections, and collectively form the process required by Alberta's Dam & Canal Safety Directive.

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# LAND AND RECLAMATION

Alberta's oil sands lie under 142,000 km<sup>2</sup> of land. Only about 3%, or 4,800 km<sup>2</sup>, of that land could ever be impacted by the mining method of extracting oil sands. The remaining reserves that underlie 97% of the oil sands surface area are so deep they are recoverable only by using drilling (in situ) methods that require significantly less surface land disturbance relative to mining.

## REDUCING OUR FOOTPRINT AND RECLAIMING LAND

Suncor works on three primary areas to minimize our impact in the boreal region:

- 1. Reducing the impact of our operations on land resources** through scientific research and best management practices, while also working with neighbouring companies to reduce the cumulative effects of development.
- 2. Accelerating the pace of reclamation of disturbed lands**, including the reclamation of tailings ponds.
- 3. Preserving biodiversity by working internally and with industry peers and multi-stakeholder organizations** on initiatives to conserve and reclaim habitat for birds, mammals, fish and other species.

End land use is an important priority throughout the life cycle of a project, from planning through to project closure and reclamation.

Progressive land reclamation takes place once the disturbed land is no longer part of active operations; this includes mine and tailings areas, roads, plant facilities and buildings, wells and pipelines. Our challenge is to reduce the size and duration of our footprint to facilitate the return of biodiversity and to sustain the function of nearby natural ecosystems.

Once an oil sands facility is no longer productive, regulations require the operator to decommission the operation and reclaim the site.

## 2018 PROGRESS ON RECLAMATION

### Base plant

Since Suncor began operations at Base plant in 1967, the project has disturbed 22,224 cumulative hectares of land in the Athabasca region. As of 2018, we have cumulatively reclaimed approximately 10% of the total land disturbance including 2,275 hectares of terrestrial reclamation and 48 hectares of wetland and aquatic reclamation.

We planted approximately 310,000 tree and shrub seedlings in reclamation areas at Base plant in 2018; bringing the total cumulative seedlings planted to close to 8.3 million. In addition, Indigenous community members, Indigenous Co-op students and Suncor employees planted approximately 4,000 aquatic plants (from 15 different species) along the shores of [Lake Miwasin](#).

*“Continual improvement in oil sands reclamation practices is one part of our overall vision of responsible development that ensures a healthy environment for today and tomorrow.”*

– Christine Daly, senior advisor, sustainability

### Fort Hills

Fort Hills officially began production in 2018. As new mines are developed, the disturbance footprint increases significantly; however, Suncor continually looks for opportunities to minimize our footprint and progressively reclaim areas no longer required for production.

Even though Fort Hills is newly in production, reclamation activities have already begun.

As of 2018, Fort Hills has completed 19 hectares of terrestrial reclamation<sup>1</sup> and 16 hectares of wetlands and aquatic reclamation<sup>1</sup>, as well as 241 hectares of temporary reclamation<sup>1</sup>.

Suncor planted approximately 18,000 tree seedlings in 2018 at a habitat compensation lake (also known as “No Net Loss Lake”), completing the reclamation initiated in 2015. In total, we have planted 75,000 tree and shrub seedlings in approximately 23 hectares at No Net Loss Lake.

<sup>1</sup> Reclaimed lands have not been certified as such by government regulators. For further details on what we mean by reclaimed, see the legal advisories section of this report.

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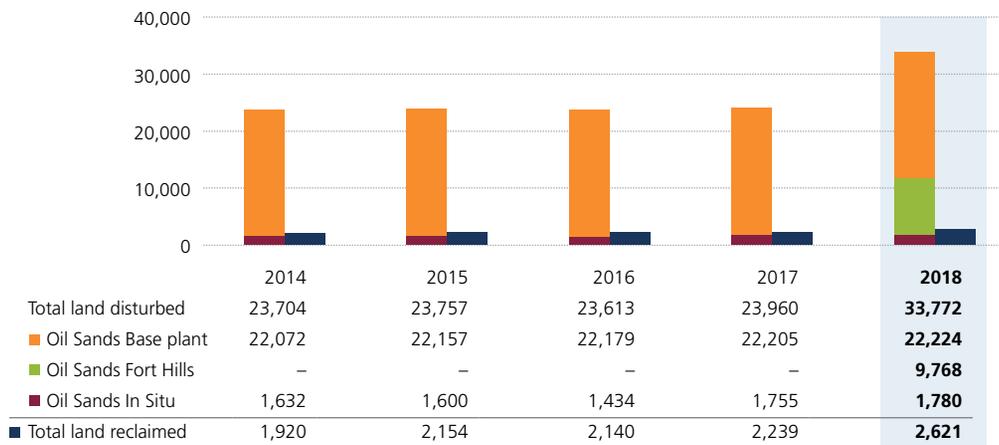
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LAND USE AT OIL SANDS\*

cumulative hectares



\* Land disturbed represents the total active footprint of our oil sands operations which includes cumulative hectares (ha) for areas cleared of vegetation, soil disturbed, ready for reclamation, soils placed and permanently reclaimed. The area reported as land reclaimed is a subset of the total active footprint and the area of non-reclaimed land for the reporting year. For further details on the definition of reclaimed, see Advisories. For additional information about this chart and its data, please refer to performance data notes (#10 – notes on land disturbance and reclamation).

Firebag

In 2018, an 11.5 hectares area was permanently reclaimed<sup>1</sup> at the Firebag project; bringing the total area reclaimed to just more than 20 hectares. We also planted approximately 33,000 tree and shrub seedlings at various borrow pits and well pads.

RECLAMATION PROJECTS

Suncor continues to conduct progressive reclamation on areas that are no longer needed for oil sands operations. Suncor is also conducting research with the intent to enable a better return to equivalent land capability from an ecological, temporal and cost perspective:

Nikanotee fen

Wetlands are an important part of reclamation efforts. To date, close to 50 hectares of wetland and lake reclamation<sup>1</sup> have been completed by Suncor.

In 2013, Suncor completed construction of a three-hectare fen, named the Nikanotee (pronounced Nee-ga-no-tee; Cree word for “future”) fen, fed by a man-made 32 hectare watershed, located at our oil sands Base plant near Fort McMurray, Alberta. The project is the culmination of more than 10 years of collaborative research. The achievement established Suncor as one of the first companies in the world to complete reconstruction of this type of wetland. We completed this work in co-operation with a number of university researchers and consultants from across the continent.

“Fens are the dominant wetland type in the boreal forest so we wanted to see that they could be re-created when we reclaim the land,” says Lisa Bridges, reclamation specialist – biodiversity, Upstream. “All our results so far indicate that it is in fact possible for oil sands mines to build a fen that functions similarly to a naturally occurring fen.”

The University of Waterloo led the Nikanotee fen hydrological feasibility modelling, in partnership with the Cumulative Environmental Management Association (CEMA). Suncor funded the design and construction of the fen. Along with Teck Resources and Imperial, we are funding ongoing research and monitoring of the constructed site.

Our findings thus far reveal that the water table is stable, that the fen is storing carbon (a key function of peatlands) and that the fen system supports native vegetation species and wildlife habitat – even a denning bear in the winter of 2018.

The Nikanotee fen is now a joint industry project, contributed by Suncor to other members of COSIA.

Wapisiw Lookout

From 1967 to 1997, Wapisiw Lookout – originally named Pond 1 – received tailings from production for storage. As production increased over these years, so did the pond. With closure operations beginning in 2007, the pond was transformed into a 220-hectare (544 acres) watershed, feeding into a thriving marsh wetland habitat.



Wapisiw Lookout located at Base plant.

<sup>1</sup> Reclaimed lands have not been certified as such by government regulators. For further details on what we mean by reclaimed, see the legal advisories section of this report.

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*“From vegetation monitoring, we know that the trees are performing at higher-than-forest industry standards and that shrub density has increased, which means that plants are growing naturally from nearby seed sources. It’s rewarding to see Wapisiw Lookout flourish.”*

– Lelaynia Wells, reclamation specialist –  
forestry, Upstream

Since Suncor became the first oil sands company to reclaim a tailings pond to a trafficable surface, Wapisiw Lookout has transformed from a field of grass into a young forest and wetland.

Canadian toads, boreal chorus frogs and wood frogs, the three species of amphibians in the Fort McMurray region have been seen at Wapisiw. Canadian toads – a species listed as “may be at risk” in Alberta – and boreal chorus frog eggs have been observed, indicating that both sexes of these species are able to locate Wapisiw and are choosing to breed at the site.

Deer, fox, coyote, moose, grouse, bald eagle, black bear and numerous other wildlife species have also visited the area or call Wapisiw Lookout home.

### Lake Miwasin

As part of our mine closure plan, we are currently investigating ways to safely return clean, treated tailings water to the environment. We are piloting this through our demonstration pit lake (DPL) – now known as Lake Miwasin. This system is a closed loop system where we maintain control of the water over a number of years; once it meets regulatory criteria, and upon government approval, we expect to allow water from Lake Miwasin to be naturally released to the environment.

Lake Miwasin is part of our closure technology development program that is designed to ensure we can successfully reclaim mine sites. This project employed the [permanent aquatic storage structure \(PASS\)](#) fluid tailings treatment technology as the first step to establish a lake capable of supporting a full ecosystem of aquatic life.

In August 2018, Indigenous Elders and Suncor’s Indigenous co-op and summer students participated in planting vegetation around the lakeshore. The planting list included culturally-significant wetland plants, such as ratroot, sweetgrass and sweet gale, recommended by Indigenous Elders and knowledge holders through the Suncor-sponsored [Culturally Significant Wetland Plants Study](#). This was an opportunity for Indigenous communities to see that their input is improving reclamation outcomes, to continue sharing knowledge about the species being planted, and to see the progress of Lake Miwasin.

*“With this improved approach, we believe we can create a fully functioning lake in a reclaimed boreal forest ecosystem decades sooner than with other reclamation options.”*

– Rodney Guest, director, water and closure, Upstream

In May 2019, members of the First Nations and Métis community were invited for the Lake Miwasin / Constructed Wetland Treatment System workshop. The workshop provided an opportunity for additional community input on the proposed research and monitoring projects for the community led monitoring (CLM) program for the Lake Miwasin project.

## SUNCOR’S MULTI-PHASE RECLAMATION PROCESS

### Developing a mine reclamation and closure plan

Before developing a new mine, we develop life-of-mine closure plans and mine reclamation plans that identify how and when mine-disturbed areas will be reclaimed. These plans are updated regularly through the life of the project, where we can update to include new developments and technology into the closure plan.

The Alberta government must authorize reclamation plans for all new projects, and authorizes updated plans as they are developed.

Mining oil sands requires digging up to 80 metres below the surface, creating a mine pit that is usually filled in with overburden and/or tailings from the extraction process. Before mining, we salvage soils and suitable overburden that sit over the oil sands deposit. The soil is used immediately, when land is available for reclamation; or is stockpiled for future use.

In the past, there was a lag time of many years between when soil and overburden were removed and land reclamation could begin. We are working to close that gap so disturbed areas become available soon after they are created, through a process known as progressive reclamation.

### Developing an in situ reclamation and closure plan

Similar to a mine, we also develop conservation, reclamation and closure plans for land disturbed by our in situ operations. A relatively recent regulatory requirement, each in situ facility is now required to complete a project-level conservation, reclamation and closure plan (PLCRCP) and to update it every five years. This integrated approach to conservation, reclamation and closure planning and execution provides a project-level plan for achieving equivalent land capability and long-term, sustainable environmental outcomes after closure.

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Following the [Alberta Energy Regulators Specific Guidance](#), in situ facilities report on land disturbed and reclaimed. While in situ wellpads may be used for longer than previously thought, reclamation of depleted borrow pits is the focus at Suncor's in situ facilities. Reclaimed borrow pits will provide a matrix of uplands, wetlands and lakes, reflective of the local boreal forest.

## CERTIFICATION OF RECLAIMED LANDS – A COMPLEX ISSUE

Some people question why so little land disturbed by the oil sands industry has been certified as “reclaimed” by the regulator. There is an expectation by the regulators and stakeholders alike that reclaimed land must be shown to be on a path to achieving the final closure outcome, which is, for our operations in the Wood Buffalo region, a locally common, self-sustaining boreal forest. There are a number of assessment points along that path, specifically related to vegetation success.



Planting at Lake Miwasin, formerly known as demonstration pit lake.

The regulator will issue a reclamation certificate when equivalent land capability has been achieved. Land capability must consider the physical, chemical and biological characteristics of the land, including:

- topography
- drainage
- hydrology
- soils
- vegetation

In 2009, the Government of Alberta implemented a reclamation reporting system that gives the public a clear understanding of the progress being made during the reclamation process. The [oil sands information portal \(OSIP\)](#) is a one-window source for information; the public portal has both an interactive map display and a data library.

## LAND DISTURBANCE

### In situ land disturbance

Approximately 97% of Canada's oil sands surface is recoverable using in situ technology, which results in a footprint similar to conventional oil production. In situ operations disturb only about 15% of the land required for traditional mining operations.

As the oil sands industry grows, the ratio of land being disturbed by development is expected to decline as reclamation continues to increase.

However, in situ oil sands projects, along with oil and gas exploration, forestry and other industrial activities, do have an impact. The associated roads, seismic lines, power corridors and pipelines leave linear paths that cause forest fragmentation and can negatively impact wildlife habitat. Borrow pits for clay and gravel are required for the construction of these facilities, but are typically available for progressive reclamation early in the life of the project.

## Other land disturbance challenges

As a matter of course, we undertake remediation at our downstream retail sites where required. Remediation is done in conjunction with upgrades to facilities and tanks at existing operations as well as at sites facing closure. We also conduct remediation at our oil sands facilities where required.

## INDUSTRY COLLABORATIONS AND RECLAMATION RESEARCH AND MONITORING

Suncor participates in several research and monitoring projects that are helping us understand the impact of development on the boreal forest, and the steps we can take to improve our reclamation efforts.

Among these are projects that support native tree, shrub and aquatic species that are an ecologically and culturally important component of boreal forest ecosystems:

- In the **Culturally Significant Wetland Plants Study**, we partnered with Elders from five First Nation communities to develop a list of 10 significant wetland plants, to grow and plant in reclamation.
- The **Industrial Research Chair in Forest Land Reclamation** is expanding its early success in better understanding forest canopy development and working to improve tree growth during forest stand initiation and development. The program is also developing recommendations for establishing more spatially diverse site conditions and forest communities.
- The **Industrial Research Chair in Terrestrial Restoration** is examining the root growth of boreal forest tree and shrub species, to provide knowledge of boreal forest ecosystems that can be incorporated into reclamation and closure plans.

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- The **Long-Term Plot Network**, established in 2000, collects soil, tree, and vegetation data from permanent plots every five years. The data is used to explore long-term trends in soil properties, forest productivity, and plant community composition in oil sands mining reclamation areas.

Part of a larger, continent-wide initiative, the **Boreal Monitoring Avian Productivity and Survivorship program** is advancing our understanding of avian population dynamics and diversity in reclaimed and disturbed habitats in the Athabasca oil sands region. Through ongoing monitoring, the program is evaluating disturbance effects on avian habitat quality and assessing reclamation designs to help guide our reclamation work.

**Human health and wildlife risk assessment research and monitoring** continued in 2018 to ensure mining and in situ-disturbed lands are reclaimed in a manner that prevents health risks to people and wildlife.

### Tailings technologies collaboration

As a company committed to accelerating environmental performance improvements, Suncor shares details on our tailings management work with members of Canada's Oil Sands Innovation Alliance (COSIA).

In return, we gain access to technologies that other member companies are using to manage existing tailings ponds.



*Suncor employees at Lake Miwasin.*

### The Faster Forests program

The Faster Forests program is designed to address forest fragmentation by strategically planting trees in disturbed areas across the oil sands region.

In 2018, close to 300,000 trees and shrubs were planted, bringing the total number of trees and shrubs planted since 2009 to approximately five million.

Planting trees and shrubs native to the area is a major focus of the program. These seedlings will help reclaimed oil sands exploration sites establish forest ecosystems and become integrated with surrounding forests more quickly than areas reclaimed with grass species, as was done in the past.

The result: greater ecological integrity and biodiversity. Berry-bearing shrubs such as blueberry and Saskatoon are important to Indigenous communities and wildlife.

Suncor has adopted learnings from the Faster Forests program and incorporated them into our operations. This practice has allowed us to address historical disturbances that were not otherwise revegetating.

### Oil Sands Vegetation Cooperative

The Oil Sands Vegetation Cooperative was initiated by oil sands mining operators in 2009 to collect native shrub seeds efficiently and collectively. The objective of the seed collection program was to provide seedlings the companies needed to complete their annual reclamation programs, as well as to establish a long-term native seed bank to address future revegetation requirements faced by the industry as a whole. Since 2009, the seed collection program has grown to include in situ operations.

The vegetation co-operative has also evolved to collaboratively conduct research to support the storage, germination, nursery growing, and planting of seedlings grown from the seed collected by the program. Examples of this research include: improving seed longevity in storage, germination of native shrub species, vegetative propagation of boreal shrubs, and measuring the success of shrubs grown from the cooperative's collected seed.

In the first decade since its inception, seed collected by the vegetation co-operative has played a major role in supporting Suncor's current reclamation programs by providing the seed that is necessary to grow healthy trees and shrubs, and in supporting Suncor's future reclamation programs by banking enough seed to grow millions of seedlings for multiple tree and shrub species.

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# BIODIVERSITY

Suncor is committed to supporting biodiversity. Wherever we operate, our commitment is the same: protect wildlife from harm, keep our people safe, and return the natural habitats of the sites we disturb.

Suncor's oil sands, in situ and mining operations are located in diverse landscapes, home to ecosystems comprising a variety of plants and animals. Our reclamation planning and execution efforts focus on improving the landscape biodiversity outcomes so we can return the natural diversity of plants and animals at the end of an operating area's life.

Biodiversity considerations are included in the environmental impact assessments (EIA) that are required at all our major operations before their construction. Biodiversity risk is determined during the EIA phase and is typically driven by regulations and discussions with relevant stakeholders, including the applicable regulatory authority.

We also collaborate with Indigenous communities, industry peers and multi-stakeholder organizations on research and monitoring initiatives to conserve and reclaim habitats for wildlife.

*In northern Alberta, remote cameras monitor wildlife activity in the forested areas around our oil sands in situ and mining operations and reclaimed sites. In 2018, cameras in reclaimed sites recorded more than 23,000 sightings of 20 wildlife species. In the same reclaimed areas, acoustic recording units recorded seven species of bats over more than 10,000 hours of monitoring, and targeted wildlife surveys identified more than 88 species of birds and three species of amphibians in 2018.*

Once a landform is considered ready for reclamation and will no longer be used for active operations, final landform contouring can progress. Suncor constructs closure drainage features and places reclamation soils. We incorporate surface variability and wildlife habitat features to encourage biodiversity in the final landscape.

We plant locally sourced tree, shrub and aquatic seedlings are planted and the soil is fertilized directly at the seedling roots to help the young plants during early development years. The reclaimed areas are then monitored to ensure the new forest, lakes and wetlands mature into a healthy, self-sustaining ecosystem.

## HABITATS PROTECTED OR RETURNED

In 2018, we planted approximately 250,000 trees and shrubs at various Suncor reclaimed sites. This brings the total number of seedlings planted since 1976 to approximately 8.5 million and includes:

- five tree species
- 10 shrub species
- 14 aquatic plant species

Reclaimed areas in our oil sands operations planted in the 1980s are now seeing second and third-generation conifer seedlings take root under mature planted trees – a positive sign of regeneration within a healthy forest. Another indicator of success is the increase in wildlife returning to reclaimed lands.

*Over 50% of the oil sands area around Fort McMurray is covered in wetlands – mostly fens and bogs. To date, we have successfully created open water wetlands, marshes, and a fen.*

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Species spotted on our reclamation areas include:

- **Birds:** Five listed migratory bird species (western tanager, sora, Cape May warbler, and barn swallow), two species of raptor (American kestrel, northern harrier), and sharp-tailed grouse have been observed “lekking” (spring mating dance) on our reclaimed lands.
- **Mammals:** Grey wolf, coyote, lynx, red fox, moose, mule deer, white-tailed deer, snowshoe hare, muskrat, otter, beaver, and small mammals; black bears have also used our reclaimed areas for denning.
- **Amphibians:** Boreal chorus frogs, wood frogs, and Canadian toads use our reclaimed areas for breeding.

Suncor’s operations are proximal to globally listed species at risk (IUCN Red list) which breed, live and migrate through the region. We track observations of these species and report them to the appropriate provincial or federal regulator.

Type	Common name	IUCN Ranking
Birds	Barn Swallow	Least Concern
	Canada Warbler	Least Concern
	Common Nighthawk	Least Concern
	Peregrine Falcon	Least Concern
	Short-eared Owl	Least Concern
	Western Grebe	Least Concern
	Yellow Rail	Least Concern
	Olive-sided Flycatcher	Near threatened
	Horned Grebe	Vulnerable
	Rusty Blackbird	Vulnerable
Whooping Crane	Endangered	
Mammals	Wolverine	Least Concern
	Northern Myotis	Near threatened
	Little Brown Myotis	Endangered
Amphibians	Northern Leopard Frog	Least Concern
	Western Toad	Least Concern
Arthropods	Yellow-banded Bumble Bee	Vulnerable



Black bear recorded as part of the photographic monitoring program.

WILDLIFE MANAGEMENT

Wildlife management in the oil sands

The objective of Suncor’s wildlife management program in the Regional Municipality of Wood Buffalo (RMWB) is to minimize human-wildlife conflicts and wildlife habituation and conditioning, while maintaining a healthy wildlife population and diversity.

We regularly consult and collaborate with Alberta Environment and Parks’ (AEP) and Alberta Energy Regulator’s (AER) wildlife biologists and local fish and wildlife officers.

Suncor applies the following priorities to mitigate for wildlife conflicts:

1. Promote respect for wildlife and their habitat

- Wildlife cameras placed in our environmental buffer zones monitor wildlife activity to help us make sure we aren’t impeding their movement.
- Personnel on site are encouraged to report all wildlife sightings using Suncor’s online wildlife reporting tool or by calling security.
- We create buffers around active den sites to prevent disturbance of denning animals.

2. Reduce risk of human-animal encounters through managing attractants

- Wildlife-proof waste bins are used on site to keep bears and other wildlife from getting in the habit of eating food waste on site. All Suncor personnel in our operating areas are instructed to use the wildlife-proof bins for all food waste, to avoid keeping food or food waste in truck boxes, and not to litter.
- Regular human-wildlife conflict prevention inspections monitor compliance to Suncor wildlife programs, including waste management.

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### 3. Provide education to workers to promote proper behaviours

- Wildlife training is mandatory for all personnel at our operating sites in the RMWB.
- We routinely issue safety bulletins, posters and alerts to heighten awareness if and when wildlife encounters become a concern.
- Members of the wildlife team attend employee talks to discuss wildlife programs and wildlife safety.
- Suncor regional standard RGS0029A (Wildlife standard) is a resource available for workers on all RMWB operating sites.

### 4. Apply aversion conditioning methods and tools to resolve human-wildlife conflicts

- Suncor contracts wildlife specialists during bear season to respond to wildlife reports and help workers reduce the risk of wildlife encounters.
- Suncor works with the applicable regulatory authority to address human-wildlife conflicts, as required.

## Bird protection program

Suncor is committed to minimizing interactions between birds and the process-affected ponds required for its operations in the oil sands through:

- annual assessment of ponds and sumps to determine potential wildlife risk
- adoption and refinement of deterrent methods
- monitoring for bird contacts
- searching for bird mortalities

Suncor is a member of the Oil Sands Bird Technical Team (OSBTT), a team involving the collaboration of regional industry members and regulators that generates and shares knowledge to help reduce harm to and mortalities of birds resulting from potential risk of bird contact with harmful substances at oil sands sites. OSBTT develops research studies and initiatives to address any potential gaps in current regional monitoring protocols used.

The knowledge gathered by OSBTT can be applied to inform and improve current monitoring procedures and research into bird interactions in the oil sands region. We use a combination of radar-linked deterrents, non radar-linked deterrents and physical deterrents to discourage birds from landing on tailings and other process-affected ponds. We closely monitor our deterrents and attend to any affected birds in consultation with Alberta Environment and Parks (AEP).



*Freddy the hawk and Clementine the owl were introduced to an area where up to 740 ravens were roosting. The final day of the pilot saw that number reduced to less than 30.*

**Bird management pilot program:** In December 2018, Suncor introduced a 30-day pilot program at Base plant to test the effectiveness of falconry to reduce the number of ravens roosting in Upgrading operations during the winter months. When roosting, ravens produce excess amounts of excrement that build up in operating areas, creating numerous potential health and safety concerns for workers.

A third-party company brought birds of prey into targeted areas, a natural form of wildlife management during which a hostile environment is created and ultimately deters ravens from using Upgrading areas for roosting.

Suncor has submitted a final report to AEP and pending review, may allow for additional licences for this type of project in the future.

## WORKING WITH STAKEHOLDERS

### Culturally Significant Wetland Plant study

Suncor, Alberta Innovates and local Indigenous communities have been working together since 2014 to identify culturally significant plants and learn how to grow and establish them on reclaimed lands in the Wood Buffalo Region of northern Alberta. This collaboration focuses on integrating values and traditional knowledge from Elders and members of the surrounding communities with western science to guide and enhance reclamation activities within Suncor's operations.

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Culturally significant sweetgrass used for Lake Miwasin vegetation.

We invited Elders and Indigenous community members to help design the Culturally Significant Wetland Plants study and its objectives by attending meetings, sharing knowledge, spending time together on the land, and visiting a greenhouse. Co-operation between Suncor and the neighbouring Cree, Dene and Métis communities has helped strengthen our relationships, while allowing for inclusion of different perspectives on ecological reclamation considerations. The study will run until 2020 and we will share learnings with all participants so they can grow and establish these plants in their own communities.

Suncor is demonstrating the value of early, consistent and responsible engagement with local communities. The Culturally Significant Wetland Plants study is resulting in more meaningful and collaborative insights that guide reclamation planning and closure outcomes, while enhancing mutual trust and respect.

## COLLABORATION ON BIODIVERSITY

It's becoming increasingly important for the oil sands industry to work together to address the cumulative impacts of development on wildlife and biodiversity. One way we do this is through our participation in Canada's Oil Sands Innovation Alliance (COSIA).

Through COSIA, we work on a wide range of projects aimed at environmental footprint reduction, accelerating reclamation and preserving biodiversity.

*COSIA's land environmental priority area is focused on reducing the footprint intensity and impact of oil sands mining and in situ operations on the land and wildlife of northern Alberta.*

Suncor worked collaboratively with other COSIA members to develop the [COSIA land environmental priority area \(EPA\) performance goal](#), an intensity-based metric that measures the amount of in situ surface land disturbance per area of reservoir accessed. Collaboratively, COSIA organizations are working toward the [goal of reducing their operational footprint intensity by 10% by 2022](#).

In addition, Suncor led development of a [COSIA land challenge](#) focused on finding new technologies that support approaching zero land disturbance exploration. The COSIA land challenge was released in Q1 2017. Several new technology ideas and proposals have been received to date. At least one proposal was advanced in Q4 2017 to the pilot stage.

## Alberta Biodiversity Conservation Chairs

Suncor is part of the COSIA-sponsored [Alberta Biodiversity Research Chairs program](#), which intends to fast track biodiversity science and support on-the-ground research on the environmental impact of development in the boreal forest of northern Alberta.

The current program includes two research chairs at the University of Alberta which cover three integrated research themes:

1. How do we measure successful restoration of biodiversity?
2. How will climate change alter our ideas about what elements of biodiversity are most important and plausible to conserve and restore?
3. What is the value of created wetlands in their function and sustainability?

## Alberta Conservation Association (ACA) Boreal Habitat Conservation Initiative

Suncor has partnered with Alberta Conservation Association (ACA) Boreal Habitat Conservation Initiative since 2002. This award-winning initiative helps protect intact boreal forest and wetlands, ensuring the larger boreal forest ecosystem remains undisturbed and biodiversity is preserved.

Beginning with the successful pilot project at Winagami Lake northwest of High Prairie, Alberta – home to more than 200 species of birds, and important to fisheries and wildlife – Suncor has worked with ACA to secure approximately 9,800 acres of ecologically sensitive land across Alberta.

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# CARIBOU RECOVERY AND CONSERVATION

Suncor and Canada's Oil Sands Innovation Alliance (COSIA) member companies are initiating and applying leading-edge habitat restoration projects to repair fragmented habitat, and are testing new technologies to avoid and/or minimize future exploration disturbance footprint in northeastern Alberta.

Woodland caribou are adapted to life in the boreal forest. They are a non-migratory subspecies that require large expanses of habitat with low densities of predators, like wolves, and are usually found in small numbers.

## COSIA'S CARIBOU PROJECTS

Complex combinations of natural and human-caused factors have had a direct effect on woodland caribou by creating landscape change and indirectly increasing predation. Due to the decline in caribou populations resulting from these changes, they are listed as threatened under *Canada's Species at Risk Act*.

Within the boreal forest, landscape change has altered and contributed to a fragmented landscape. This often leads to increased populations of deer, moose, elk and their predators. Given the low numbers of woodland caribou in the boreal forest, any increased predation pressure can have devastating effects.

As an operator in the boreal forest, Suncor has a role to play in contributing to caribou recovery and conservation, and we've developed a strategy, working with our industry peers and other stakeholders through organizations such as COSIA, to mitigate our impact on caribou. This means regular consideration of caribou-focused objectives at both the local and landscape levels and includes things such as:

- incorporation of under-pipe crossings along above-ground pipelines at in situ projects
- reclaiming disturbed areas to accelerate recovery of caribou habitat



Woodland caribou recorded as part of the photographic monitoring program.

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## Algar project

In collaboration with COSIA, Suncor completed a multi-year caribou habitat restoration program to repair fragmented habitat within the Algar region of northeast Alberta in 2015.

The Algar project was completed through an integrated regional approach, with COSIA companies working together to repair fragmented habitat across 570 km<sup>2</sup> of the Algar region, a portion of the East Side Athabasca River (ESAR) caribou range, outside of their actual licence areas.

Monitoring of vegetation and wildlife response has been underway since the completion of the restoration program. Learnings gained and the science developed from the Algar project has been shared across COSIA member company participants in the [Land Environment Priority Area](#), to inform similar restoration programs undertaken since and those planned in the future.

## Regional Industry Caribou Collaboration (RICC)

Suncor is a member of the COSIA Regional Industry Caribou Collaboration (RICC).

RICC members work collaboratively across tenure and lease boundaries with academia, the Government of Alberta and the Alberta Biodiversity Monitoring Institute (ABMI) Caribou Monitoring Unit on an ongoing basis to co-ordinate industry restoration of disturbance in priority areas and to find new research opportunities to improve how we restore habitat and understand the biodiversity throughout the RICC study area.

The RICC study area covers approximately 85,000 km<sup>2</sup> and is focused on two northeastern Alberta caribou ranges: the ESAR and Cold Lake boreal woodland caribou ranges.

## COSIA Zero Footprint Exploration Challenge

Suncor envisioned and collaboratively led development of the [COSIA Land Challenge](#) for zero footprint exploration (a.k.a seismic) to support caribou conservation by avoiding and/or minimizing new disturbance required for in situ project development.

It was designed to address landscape change caused by the creation of seismic lines that contribute to the fragmentation of the boreal forest and subsequent caribou population declines through increased predation.

## PINPOINT NEAR-ZERO DISTURBANCE SEISMIC PROGRAM

Today the oil sands industry uses the low-impact seismic (LIS) approach to gather sub-surface geological information, which guides oil sands in situ reservoir planning and production. Trees are cleared in a grid of criss-crossing lines that are two to three metres wide and enable seismic equipment access. The LIS approach is an example of an oil sands innovation developed during the last decade to support environmental performance improvement, since historical seismic lines were up to 10 metres wide. Creation of the COSIA Land Challenge and development and piloting of near-zero oil and gas exploration tools, like the Explor PinPoint technology, demonstrates the oil sands industry's drive for the next step-change in environmental footprint reduction.

To strive to meet the [COSIA Land Challenge](#), Suncor executed the PinPoint Near-Zero Disturbance Seismic Program in partnership with Explor in 2017 (2D pilot), and Explor and Alberta Innovates (government) in 2018 (3D pilot).

By using a hand-portable tool to apply individual source points during a series of pilot tests of Explor's innovative PinPoint technology, the PinPoint Program acquired ultra-high density seismic imaging without the need to clear trees. These results demonstrated that high-quality seismic data can be obtained safely and with near-zero footprint, at least on a small-scale.

PinPoint Program results suggest that Suncor may one day be able to non-destructively acquire seismic at a commercial-scale and thus deploy seismic programs aligned with caribou recovery and conservation objectives. The results have been shared with COSIA participants in the [Land Environment Priority Area](#) to support environmental performance improvement in the oil sands region, and technology validation and optimization continues.

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## SOCIAL RESPONSIBILITY

We work hard to build and maintain relationships with local communities, Indigenous Peoples and stakeholders, and meaningfully consider their issues and concerns about our operations and the effects of proposed development. Creating vibrant communities requires developing trust, and collaborative and proactive relationships.

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# STAKEHOLDER AND INDIGENOUS RELATIONS

The trust and support of stakeholders and Indigenous communities are valuable to Suncor and foundational to successful energy development.

Stakeholders and Indigenous communities are the individuals and groups who could be affected by our operations or who could, through their actions, affect our business. Examples include:

- landowners and community residents
- trappers
- governments
- regulators
- non-governmental organizations and environmental groups
- community investment partners
- business groups
- customers and suppliers
- employees

We work hard to build and maintain relationships with local communities, Indigenous Peoples and stakeholders, and meaningfully consider their issues and concerns about our operations and the effects of proposed development. This includes working together to mitigate potential social, environmental, and economic impacts, and ensuring that local communities benefit from development.

## OUR APPROACH

Those affected by Suncor's business have a right to be informed about our activities, participate in a transparent engagement process and be involved where the issues and opportunities affect them. Input and feedback on our activities and decisions are necessary and stakeholders and Indigenous communities are asked how they wish to be consulted.

Relationship building and authentic discussion are essential, as well as more formal engagement or consultation processes. For example, we regularly take part in community advisory meetings with several Indigenous communities.

Participating in multi-stakeholder forums and engaging on issues of national interest are also vital. This includes work with [Ceres](#), a sustainability non-profit organization that works with investors and companies to build leadership and drive solutions. We also contribute to [Canada's Ecofiscal Commission](#), which aims to shape policy to encourage economic activities that support mutual benefits such as job creation, investment and innovation.

As part of Suncor's Operational Excellence Management System (OEMS), we have tools and frameworks to align us in using a consistent approach to relationships with stakeholders and Indigenous communities, whether it is local engagement or involvement in national forums.

These tools and frameworks outline Suncor's responsibilities and commitments, and provide a mechanism for us to consider the needs, interests and concerns of stakeholders and Indigenous communities, and to incorporate them into our business decisions. They are implemented via standards and guidelines and are supported by procedures, practices and tools.

## POLICIES

Our [Human Rights, Stakeholder Relations](#) and [Canadian Aboriginal Relations policies](#) outline our commitments and key beliefs with respect to stakeholders and Indigenous communities near our operations. Other related policies include:

- [Improper payments policy](#)
- International security policy
- [Harassment and violence-free working environment](#)

Suncor's Stakeholder Relations and Canadian Aboriginal Relations policies are reviewed every three years to incorporate learnings and reflect evolving societal expectations and external context.

Suncor supports the Truth and Reconciliation Commission's call to action for the corporate sector to adopt United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) as a framework for its relationship with Indigenous Peoples in Canada. To implement this framework, Suncor is committed to meaningfully engage with communities, listen, have open dialogue about our historical relationships and deepen relationships. We also engage with Indigenous thought leaders, in efforts to build our knowledge and understanding on UNDRIP.

**1,113** employees  
participated in a cultural experience

**\$703** million  
spent on direct purchases from  
Indigenous businesses in 2018

**30+**  
**Petro-Canada branded retail sites**  
owned and operated by First Nations across Canada

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## RESPONSIBILITIES AND COMMITMENTS

All Suncor employees and contractors engaged in activities under our operational control are responsible for applying these policies. Managers are also responsible for promoting our beliefs and principles underlying these policies in joint ventures not operated by Suncor.

Suncor's chief executive officer is accountable to the Board of Directors for ensuring that Suncor's Stakeholder Relations and Canadian Aboriginal Relations policies are implemented.

Beyond commitments outlined in the policies, we also have agreements with Indigenous communities near our operations. These agreements address how we work together on a range of matters from project consultation to realizing the benefits from our industry through commercial and business opportunities, as well as supporting skills/employment and training programs.

*Our policies outline our commitment to authentic, meaningful relationships with stakeholders and Indigenous Peoples and communities in Canada. Building and maintaining long-term and mutually beneficial relationships is at the core of these policies.*

## INTEGRATED INDIGENOUS RELATIONS GOVERNANCE

We recognize the need to embed our approach to stakeholder and Indigenous relations across the organization. One of the ways we're doing this is through an integrated Indigenous relations governance structure. The structure helps connect work across the organization.

Suncor's Indigenous relations governance structure is made up of three interconnected groups which each play a role in ensuring our activities are coordinated and advancing strong, co-operative relationships with Indigenous Peoples in Canada. They include:

- **VP Forum:** focused on strategy and linked to a subcommittee of Suncor's most senior executive team
- **network:** focused on planning and implementation and linked to Suncor's work with communities and the implementation of the social goal
- **multidisciplinary teams:** environment and regulatory, workforce development and business development

These groups meet regularly to ensure priorities are established and advancing. The governance structure also aids in ensuring information, approaches and best practices are shared across levels and locations.

## OUR APPROACH IN ACTION

We believe relationships are best maintained through open communication, authentic engagement and being involved in and part of community. This allows us to listen and engage with local stakeholders and Indigenous community members.

## Lake Miwasin

Reclamation and closure isn't just about returning the land, but doing so in a way that considers the concerns and knowledge of the local communities that will use the land. Lake Miwasin (previously referred to as demonstration pit lake), represents a collaborative effort with seven local Indigenous communities in the Wood Buffalo area and another step change on our reclamation and closure journey.

Lake Miwasin is part of our closure technology development program that is designed to ensure we can successfully reclaim mine sites. This project incorporated the permanent aquatic storage structure (PASS) fluid tailings treatment process as the first step to establish a lake capable of supporting a full ecosystem of aquatic life.

During the planning phases and throughout implementation we engaged with local Indigenous communities.

An Indigenous engagement workshop, held in April 2018, provided the group of Elders, community members and technical reviewers a chance to learn more about Suncor's tailings treatment and closure technologies, as well as the opportunity to provide input into the program.

In August 2018, Indigenous Elders and Suncor's Indigenous co-op and summer students participated in planting vegetation around the lakeshore. The planting list included culturally-significant plants, such as ratroot, sweetgrass and sweet gale, recommended by Indigenous elders and knowledge holders through the Suncor-sponsored Culturally Significant Wetland Plant Study. This was an opportunity for Indigenous communities to see how their input is improving reclamation outcomes, to continue sharing knowledge about the species being planted, and to see progress.

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In May 2019, members of the First Nations and Métis community were invited for the Lake Miwasin/Constructed Wetland Treatment System workshop. The workshop provided an opportunity for additional community input on the proposed research and monitoring projects for the community led monitoring (CLM) program for the Lake Miwasin project.

A community member, Seth Kragnes, an Indigenous student at Sister Mary Phillips School in Fort McMurray, also selected the name of the lake through a naming contest. 'Miwasin' means 'nice/beautiful' in Cree.

In the coming year, the constructed wetland treatment system will be fully constructed and will work alongside Lake Miwasin in treating the water, so that we can study the potential for returning water back to the environment.

The project team also hit the spotlight after being announced as our first-ever Spirit Award recipient at [Suncor's 2018 President's Operational Excellence Awards](#) (POEA).

The award was designed to reflect the heart of operational excellence, key behaviours, values and culture that we want to foster at Suncor. Mark Little, president and chief executive officer, had the honour of presenting this award.

"The project has shown a deep level of cross-functional collaboration, and introduced a step change in how we work with Indigenous groups and other stakeholders," explained Mark at the POEA gala. "They demonstrated excellent stewardship of Suncor resources and transparency, and achieved great project results overall."

### New ways of engaging in Sarnia

In 2018, we continued to look for new ways to engage and work differently with communities near our Sarnia refinery, including the Aamjiwnaang First Nation.

*"As neighbours with the Suncor Sarnia refinery, we feel that increased involvement and collaboration on projects, plus the involvement of refinery staff at community events and functions, strengthens that relationship and adds Suncor to that Circle of Aamjiwnaang. We know Suncor understands what it means to be part of the community."*

– Sharilyn Johnston, environment coordinator with the Aamjiwnaang First Nation

The Aamjiwnaang Environment Department was fully engaged in the development of a remediation project. Their input directly influenced aspects of the work, including air quality management and species-at-risk plans. That project is now fully implemented and progressing well.

"In the Aamjiwnaang community, relationships are foremost. Each year the community holds the 'Circle of Aamjiwnaang', where neighbours reaffirm their commitment to caring for and protecting each other," says Sharilyn Johnston, environment coordinator with the Aamjiwnaang First Nation.

We also came together to develop a work plan that is aligned with the annual priorities set out by Chief and Council, including shoreline softening efforts, development of a traditional medicine garden, and establishing a fund for entrepreneurs in the Aamjiwnaang community.

We look for opportunities to engage in the Sarnia community meaningfully, where we can both sponsor initiatives and support our employees to get involved. Examples include the annual Earth Day community clean up and Little Native Hockey League tournament that Aamjiwnaang hosted in Mississauga this year.

By remaining focused on community needs and priorities, we have been able to increase collaboration and strengthen relationships, creating more opportunities to work together and make positive community changes.

## SUPPORTING PROCESSES

Beyond direct consultation and engagement activities, several internal processes ensure that we are aware of and understand the interests and concerns of stakeholders and Indigenous communities, and are considering those views in our operations and business planning. These processes include:

- Our strategic issues management process (SIMP), which works to proactively identify, monitor and manage key environmental, economic and social issues considered most critical to Suncor, stakeholders and Indigenous communities.
- Suncor's Asset Development and Execution Model (ADEM), where consideration for stakeholders and Indigenous communities' concerns, and potential impacts, are integrated into early project planning stages, before engagement occurs and/or final business decisions are made.
- Our annual [materiality review](#) which identifies key issues of concern for stakeholders and Indigenous communities, and includes information learned from ongoing engagement and feedback from Suncor's regular multi-stakeholder forum with Ceres.

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## EVALUATING THE EFFECTIVENESS OF OUR ENGAGEMENT

### Monitoring

As part of our OEMS, the Stakeholder Relations Framework includes:

- guidelines and processes to ensure engagement planning and practice is annually reviewed and measured against performance metrics, and that those learnings are applied to future engagement
- a grievance mechanism that enables us to receive, investigate and respond to complaints from stakeholders and Indigenous communities that may arise from direct and/or indirect impacts associated with Suncor's operations

Beyond our policies and management system, we monitor the evolution of our stakeholder relations activities using several processes, including the Indigenous Relations Governance structure and SIMP.

### Results

The way the world views energy development has fundamentally changed. Expectations are increasing, and the legal and regulatory context continues to evolve and become more complex. We believe our social performance is as important as our environmental and economic performance.

In 2016, we built on the learnings from the strategic environmental performance goals established in 2009 and released our first [social goal](#). Since then we've been focused on implementing this goal meaningfully, which is aspirational, bold and designed to challenge and stretch our organization, culture and behaviour.

Suncor is also certified at a gold level in the [Canadian Council for Aboriginal Business](#) (CCAB) [Progressive Aboriginal Relations](#) (PAR) program. PAR is Canada's only certification program focused on best practices in Aboriginal relations.

The certification process includes external assessment from community members of an organization's performance in four key areas: employment, business development, community investment and community engagement.

*“Suncor has demonstrated that they are willing to put in the effort to continue learning and growing in this area. They are a role model for positive and progressive Aboriginal relations and more importantly, they have a continuous improvement philosophy and focus.”*

– J.P. Gladu, president and CEO, CCAB

## WHAT WE ARE DOING DIFFERENTLY

### Social goal

Setting goals is one way to motivate us to look differently at how we do business and work with others. Another way, is to reflect and encourage positive changes to the way we think and act to increase the participation of Indigenous Peoples in energy development. It is not the work of a small group at Suncor but the work of all of us.

## Expanding partnerships

In 2017, Suncor signed two significant business agreements with First Nations communities. In Quebec, Suncor purchased a 41% equity interest in [PetroNor](#), a petroleum products distributor across the James Bay and Abitibi-Témiscamingue regions that is owned and operated by the James Bay Cree.

In Alberta, Suncor, Fort McKay First Nation and Mikisew Cree First Nation purchased a 49% interest in Suncor's East Tank Farm Development, a strategic infrastructure asset in the Wood Buffalo region.

Both of these agreements are examples of new ways for business and First Nations to work together as partners.

### Beyond Wood Buffalo

Suncor has been operating in the Wood Buffalo region of Alberta since 1967. We've been part of the community and building relationships for a long time. While we'll continue to do so, we know that we need to broaden our focus to our other operating areas. As we continue to implement our social goal, we'll look to increase opportunities with communities and our key partners across our operations, including through the work of the [Suncor Energy Foundation](#).

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# COMMUNITY INVESTMENT

Within Suncor's vision to be trusted stewards of valuable natural resources, we have the opportunity, and responsibility, to help build a better future.

Since Suncor began operations in the oil sands more than 50 years ago, this commitment has been embodied in our work with communities across our operations, including within the efforts of the Suncor Energy Foundation.

## OUR COMMUNITY INVESTMENT STRATEGY

Society is facing complex challenges that are impacting the overall well-being of each of us – socially, economically and environmentally. This requires innovative, sustainable solutions and contributions from all of us.

Suncor, and our private, non-profit, charitable organization, the [Suncor Energy Foundation \(SEF\)](#), seek to provide investments that create value for society, and for our business, by addressing community issues of mutual interest to Suncor in a way that seeks solutions and benefits all. Our vision is to create a better world with the communities in which Suncor operates, and with those who are courageously seeking solutions and making a positive difference in society.

As SEF marked its 20th year in 2018, Suncor community investment and SEF completed a strategy refresh with input from community leaders, partners and Suncor leaders and employees. The updated strategy is focused on three areas, or pillars:

- 1. Strategic funding priorities:** making donations and investing in the work of others in three areas: Indigenous Peoples, energy future, and community resilience.
- 2. Community presence:** being present and engaging locally in our operating areas, including supporting employee community engagement through the SunCares program.
- 3. Social innovation capacity:** continuing to build and support social innovation capacity in others, and within Suncor, through CI and SEF-led programs and initiatives.

The strategy centres on four phases that underscore continuous observation, relationship building, learning and evaluation.

*“This strategy positions us for our next phase of growth and learning, as we continue to build on the strength of our roots while innovating for the future. By leveraging our strengths as an integrated energy company and coming together with others, we can find and realize opportunities for long-term solutions that benefit communities, our company, and future generations.”*

– Lori Hewson, director, community investment and social innovation

## A PORTFOLIO APPROACH

Our community investment and SEF approach has grown from being primarily responsive to short-term community requests to one where we are also working *with* and *of* communities, by coming together in partnership and learning for the common good through a corporate social innovation approach.

All parts, from philanthropic donations to relationships that contribute to transformational change, are important for community strength and well-being. This portfolio approach to our investments supports lasting change in communities, as well as helping Suncor and SEF continuously learn and bring knowledge and insights back to shape our own business.

“When we have a clear understanding of all the elements of a system – including who's involved, the roles they play, and how impacts are felt – we can be strategic with our investments and better ensure they support positive community change,” says Hewson.

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## OUR STRATEGY IN ACTION

Here are a few examples of the community investment strategy in action across partners and systems, reflecting our objectives, beliefs and operational model and what we're learning.

### Creating a shared future

Through donations and the further development of relationships with the [Banff Centre](#), [Ashoka Canada](#), the [Tamarack Institute](#), [Reconciliation Canada](#) and the [Turtle Island Institute](#), community investment and SEF are working to support reconciliation and the national social innovation eco-system.

As a few examples of the organizations funded by community investment and SEF, each of these organizations has strengths in leadership development programming, complexity and adaptability. As a result they are elevating conversations about community development and reconciliation.

"Strong leaders who can navigate complexity are essential for building resilient communities that can adapt and thrive through change," says Eric Axford, EVP and chief sustainability officer, and Chair of the SEF Board.

Recently, Pat White, a Suncor team member and former vice-president of human resources, began a five-month secondment with Reconciliation Canada. She has focused on developing frameworks for reconciliation action plans in organizations and corporations, including Suncor. These action plans will facilitate the cultural shifts required to advance and sustain reconciliation.

"This has been an incredibly valuable opportunity to share learnings and experiences to work together on what's possible," says Pat. "Personally, I have a much deeper sense of the truth of our collective history and impacts, and the deep importance of reconciliation for all of us."

*"Through SEF support, our hope is more leaders have the opportunity to develop the perspectives and capabilities needed to create connections and spark a bright future for all Canadians."*

– Eric Axford, EVP and chief sustainability officer, and Chair of the SEF Board

## Energy collaboration

Meeting society's energy challenges today and tomorrow is all about making informed choices. That's why Suncor and SEF are investing in an evolving set of initiatives to collaborate on the energy future we'll all share. Our goal is to leverage our strengths as an energy company and be a catalyst for an inclusive national dialogue that will enable Canada to use our energy resources wisely and pave the way for a sustainable energy future.

Alberta Ecotrust, a SEF partner, has been working to enhance capacity and collaboration across environmental non-governmental organizations (ENGOs). Building off their 2014 Mapping What Matters research, in 2018 their work extended to include a growing focus on climate conversations that shift narratives and foster generative conversations toward a low-carbon energy future.

SEF also renewed support to the Energy Futures Lab (EFL) in 2018, and their next phase. EFL 2.0 will deepen their work in Alberta and explore how to extend lessons and learning to a national level.

"Ongoing climate and energy debates have left Canada polarized in a myriad of ways. Meanwhile, much of the rest of the world is racing to a new energy future that will reshape politics, economics, and cultural dynamics around the world," says Alison Cretney, managing director of the Energy Futures Lab.

"There are enormous opportunities for those able to advance solutions. How we respond as a nation will shape Canada's competitiveness and attractiveness as a place to invest for decades, and impact our social and cultural fabric."

Through connections that started and were nurtured at the SEF Gathering, Student Energy, another SEF partner, recently hosted their first Indigenous youth energy summit, SevenGen. It brought together 200 Indigenous and non-Indigenous youth from across Canada to explore how to unite communities, build relationships and break social barriers in the energy conversation.

"The goal is to engage youth in climate and energy topics and equip them with the confidence to be part of the larger conversation in the country," reflects Cory Beaver, a Mount Royal University student, member of the Stoney Nakoda First Nation and co-chair of the summit.

"We're not just doing this for the next couple of years. We want to fight for a better reality for our children, and our grandchildren and future generations," adds summit co-chair Disa Crow Chief, a member of the Siksika First Nation.

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## Powerful voices

Working toward strong, sustainable communities takes the effort of many voices, with a variety of perspectives and experiences.

With that in mind, SEF hosted its fourth Gathering in May 2018. Approximately 155 funding partners, social innovators, government and community representatives, Indigenous youth, thought leaders and Suncor team members attended the two-and-a-half-day event, which explores complex community needs that require collaboration to make progress and see lasting change. The Gathering provides a forum for participants to:

- connect existing work and initiatives
- take a system-wide view
- explore a variety of perspectives
- strengthen partnerships

The 2018 event focused on storytelling, community resilience and diverse collaboration. The theme: “There is No Us and Them: the Nature of Paradox.” It allowed for deeper reflection on some of the challenges and opportunities experienced when groups work for change.

“Coming together we recognize the value of diversity, and the creative tension that comes along with that. The role of the Gathering is to bring everyone together to spark innovation and to see what new possibilities emerge,” says Lori Hewson.

For the first time, a group of participants were also invited to act as witnesses. Mike Lickers, Suncor senior advisor Indigenous relations, says the role of the witness is traditional in Indigenous West Coast ceremonies.

“Those who agree to witness are responsible for ensuring the community knows of the event and they vouch for the integrity of the ceremony for future reference. This is not an easy task, or one taken lightly. Witnesses may be called upon to remember what happened, who said what and so on,” explains Mike.

The Gathering had nine witnesses represented by three community partners, four young Indigenous leaders, and two Suncor team members.

Reflecting on her role as witness and the impact of the 2018 Gathering, Alexia McKinnon, associate director, Indigenous leadership at the Banff Centre remarked, “What I will be taking with me and sharing is the generosity of spirit, of us as human beings to show up and do the work that we do. In essence we’ve been invited to co-create, to start our stories from the beginning and weave them together.”

## COMMUNITY PRESENCE

In 2018, Suncor and SEF continued to support many local initiatives in communities near our operations.

To mark the 20th anniversary of the foundation, SEF worked with Suncor regional leaders to provide a one-time donation of \$20,000 in each community. These funds were directed to local community organizations chosen by leaders and employees.

- **Burrard:** [Crossroads Hospice Society](#) and [Junior Achievement BC](#)
- **Mississauga:** [Riverwood Conservancy](#)
- **Edmonton/Strathcona County:** [Youth Empowerment and Support Services](#) and [Boys and Girls Club of Strathcona County](#)
- **East Coast:** [Iris Kirby House](#), [First Light St. John's Friendship Centre](#), [Bridges to Hope](#) and [Choices for Youth](#)
- **Wood Buffalo:** [Northern Lights Health Foundation](#) in support of Willow Square and the Fort McMurray Recovery Centre
- **Sarnia:** [Pathways Health Centre for Children](#) and [St. Clair Child and Youth Services](#)

Suncor and SEF also continued to support a variety of other initiatives in 2018, including the ones highlighted below.

### Wood Buffalo

In recognition of the opening of Fort Hills, we announced a number of investments to support the community going forward:

**Riverside Continuing Care facility in Fort McKay:** Announced in spring 2018, and opened in the summer, the Riverside Continuing Care facility is supported by Fort Hills. The centre is a place for Elders to visit with family and friends and share their teachings while staying in their community.

**Fort Hills ambulance donation:** Fort Hills partners donated an ambulance to the community of Fort Chipewyan and Nunee Health. This ambulance will support the health and welfare of the Fort Chipewyan community.

**Public and Indigenous Health mobile health vehicle:** this gift from SEF to the Northern Lights Health Foundation will help purchase and retrofit a medical vehicle to serve rural areas of the Regional Municipality of Wood Buffalo.

**Canadian Mental Health Association (Centre for Excellence in Recovery and Peer Support initiative):** SEF and the Fort Hills partners provided a gift to the Canadian Mental Health Association, to support an exciting new project for a walk-in centre built to assist local residents in getting access to mental health resources, a recovery college and a school of peer support.

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## Calgary

**Calgary Public Library:** Connected to the opening of the new central library, SEF announced support for Indigenous programming and cross-cultural learning opportunities throughout the library network. This includes funding to support:

- the Elders' Guidance Circle space in the central library
- the hiring of program interns to ensure Indigenous populations are engaged in service design and evaluation
- the development of Indigenous language resources, including an online learning platform
- Indigenous cultural initiatives, such as a speaker and a performance series
- ongoing focus on creating spaces for Indigenous culture and art in libraries across the city

This supports the library's goal of being an inclusive gathering place for all Calgarians.

## Denver

**Boys and Girls Club:** As a long-time supporter, we proudly partner with the Suncor Boys and Girls Club facility in Commerce City. This space provides young people with a safe and accessible opportunity to learn, grow and develop in education and career development, character and leadership development, health and life skills, technology, the arts, and sports fitness and recreation.

## Edmonton

**Linking Generations:** Created in 2004, Linking Generations, provides mentored and structured visits aimed at building relationships between seniors and youth in the community. The program brings the generations together so they can share their knowledge and life experiences, and encourages volunteering and social responsibility in youth.

## Mississauga

**The Riverwood Conservancy:** The Riverwood Conservancy Leadership in Environmental Achievements through Diversity and Skills (LEADS) program, is a skills-based environmental education program for secondary students grounded in the Ontario secondary school curriculum. It provides hands-on learning to more than 1,500 students each year.

In 2018 SEF's relationship with Riverwood expanded to support their work on responding to the key calls to action from the Truth and Reconciliation Commission and looking to incorporate Indigenous knowledge into the LEADS program and their organization. Riverwood also began using Suncor's Aboriginal awareness web-based training module to help remove barriers and biases and deepen knowledge within their organization.

## Montreal

**Youth Fusion:** If we want youth to feel they can be the future innovators in energy fields, we must start supporting them at an early age. Youth Fusion exposes youth to different careers in science, technology, engineering and math (STEM) but also provides the necessary tools to experiment and learn directly through a variety of mentors.

**Canadian Indigenous School Engagement:** This is an initiative that works with the Inuit, Cree, Mohawk, Innu and Mi'gmaq Indigenous communities. In Quebec, Youth Fusion is working with more than 4,400 Indigenous youth, aged 7-to-18, in remote Cree and Inuit communities, as well as in Mashteuiash, Kahnawake, Gesgapegiag and at the Indigenous Student Centres of John Abbott and Dawson Colleges in Montreal.

## Sarnia

**Lambton College:** Lambton College's mission is to provide career-focused education that serves the needs of students, industry and the community of Sarnia-Lambton. In the fall of 2018 Lambton College officially opened its new Centre of Excellence in Bio-Industrial Technologies. SEF support helped purchase new equipment that will provide students with valuable hands-on learning experiences.

The Lambton's College Indigenous Outdoor Learning and Gathering Space is also supported by SEF. It will honour Indigenous traditions and promote First Nations, Inuit, and Métis culture. It will welcome people of all backgrounds, beliefs, and ages into an inclusive space to celebrate Lambton College's diverse population.

## St. John's

**Community Sector Council of Newfoundland and Labrador:** Funding supports the implementation of an earning-by-doing model to help increase capacity for innovation and change in the community sector.

**Memorial University – Centre for Social Enterprise:** Funding supports the first MBA in Social Enterprise and amplification of other social innovation initiatives.

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## SUNCARES: INSPIRING EMPLOYEE COMMUNITY ENGAGEMENT

Volunteerism and community engagement have long been part of how our employees contribute to the community. Through our [SunCares employee program](#), we support the causes that are important to employees in the following ways:

- **Volunteering:** providing tools and resources to help our employees find volunteer opportunities, either as an individual, or as part of a Suncor team. Employees can also track their volunteer hours and receive SunCares rewards from Suncor or SEF for every hour volunteered, up to \$1,000 per year. These rewards can then be donated to any community organization of choice.
- **SunCares rewards and grants:** Suncor and SEF provide a number of grants to support our employees' engagement in their communities, including leadership rewards for those who serve in a leadership role with a non-profit organization, bereavement grants, and humanitarian and post-secondary matching grants.

In 2018, the SunCares program saw a number of changes. These enhancements are part of an ongoing evolution of SunCares designed to support employee choice in giving and encourage regular community engagement. They include:

- **Expanded humanitarian grant matching program:** Employees can now receive a match for any donation made to a humanitarian organization at any time of the year, up to a total of \$1,000 yearly.
- **SunCares Community Giving Networks (SCGNs):** We introduced a year-round regional giving model in mid-2018, to provide more choice and flexibility and expand on the previous giving campaign model. SCGNs are employee-driven networks that empower employees to connect, lead and engage in their communities, and provide tools and processes to enable this. Network volunteers plan and execute a variety of flexible, inclusive giving activities that meet the needs of their unique business area, employees and local community.
- **Changemakers program:** Conceptualized in 2018 and launched in early 2019, the Changemakers program recognizes and celebrates Suncor's community changemakers – those employees who positively impact community throughout the year in significant ways. Annually, five changemakers are selected through a nomination process to choose a community organization to receive a one-time gift of \$20,000 from Suncor or the Suncor Energy Foundation (SEF).

As a result of these changes, the rate of decline in employee giving observed over the last five years has begun to slow. We also saw an increase in the number of community organizations supported by Suncor employees in 2018, to 1,377.

Additionally, the total number of employee volunteer hours recorded increased by over 30%, to 73,259 hours.

*“It’s wonderful that Suncor provides an outlet for employees to give time to support the needs of others – I’m proud to be part of a community that cares for one another.”*

– Dana Moon, production control engineer

In 2018, more than \$5.4 million was contributed to community organizations across Canada and the United States. This included \$2.7 million in donations from employees, and another \$2.7 million from SunCares rewards and the corporate donations provided by Suncor and SEF.

Community investment and SEF also began user experience research in late 2018, to better understand how Suncor can continue to increase community giving and engagement, and improve the employee experience with the SunCares program.

“It’s about what’s meaningful to local employees and communities, and what makes sense for their particular area,” says Joanne Manser, senior advisor, community investment at Suncor. “SunCares is changing the face of our community support and, more than ever before, giving every employee an opportunity to help make their community even better.”

## CANADIAN OLYMPIC AND PARALYMPIC GAMES SUPPORT

Through our Petro-Canada brand, we are a long-time supporter of the Canadian Olympic and Paralympic movement. Our current sponsorship agreement extends our support for Canadian Olympic and Paralympic athletes, coaches and their families through to 2024.

Our involvement in the Canadian Olympic movement is a journey that began in 1987, when Petro-Canada organized and sponsored the torch relay for the 1988 Olympic Winter Games in Calgary. We are proud to continue our support of the Canadian Olympic and Paralympic Teams and the Coaching Association of Canada.

[Petro-Canada's Fuelling Athlete and Coaching Excellence \(FACE™\)](#) Program has supported more than 3,000 athletes on their way to the Olympic and Paralympic Games. Every year, 55 promising athletes from across Canada are awarded a \$10,000 FACE grant, shared with their coaches, to help them along their journey.

We believe one of the best ways to support Canadian athletes is to help their biggest fans – their families. We continue to support a Canadian ticketing program that will help ensure family members have the opportunity to see their athletes compete in person at the Olympic and Paralympic Games in Tokyo in 2020.

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# SOCIAL GOAL

Our relationship with Indigenous communities over the past 40 years has been a journey. We know that earning the trust and support of Indigenous Peoples and communities is foundational to our business.

There is much we can learn from Indigenous Peoples and communities. By listening and being willing to learn from one another, we can uncover mutual interests and build authentic relationships.

We know there is still work to be done, and we are making progress. Many initiatives are underway to embed our approach to Indigenous relations across all areas of our business. In 2016, we announced a social goal as part of our larger sustainability goals.

The social goal is a declaration of our intent to do things differently – to choose a new path that focuses on strengthening relationships with Indigenous Peoples and communities starting within Suncor. For us, that path is about working together and creating more opportunities for greater involvement in the energy industry, so the social and economic benefits from Canada's resources are shared more fully.

The goal outlines four areas to focus on through 2025 and beyond, where we can work together to advance greater participation of Indigenous Peoples and communities in energy development. We continue to assess how to advance the goal and will refresh components as we learn and grow in our understanding and awareness.



Permission to use this Blackfoot concept of the Medicine Wheel was granted by Elder Casey Eagle Speaker

*Suncor's social goal infographic reflects a medicine wheel. It is important to recognize there are many different versions of the medicine wheel, and not all Indigenous Peoples make use of the wheel.*

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An attendee at the Indspire event in Calgary.

## STRENGTHENING RELATIONSHIPS

Strengthening relationships with Indigenous Peoples and all Canadians, starting within Suncor.

We can do more to learn about the history and experiences of Indigenous Peoples, so we can better understand one another and change the way we think and act.

We commit to providing our employees with training and opportunities to participate in cultural experiences. We aim to measure changes in understanding and behaviours – within Suncor and through the work of the [Suncor Energy Foundation's](#) key partners like Indspire, Bridges Social Development and Reconciliation Canada.

### SUPPORTING INITIATIVES

Strengthening relationships is a priority for Suncor, and we have designed many supporting initiatives to enable our employees along the way. We're focusing on four key areas:

1. Increasing awareness
2. Building understanding
3. Shifting attitudes
4. Changing behaviours

### ABORIGINAL AWARENESS TRAINING

Aboriginal awareness training is a key way we're enabling every employee at Suncor to learn more about the history and experience of Indigenous Peoples in Canada.

Since 2015, Suncor has offered a web-based training module to ensure every employee can have a basic level of awareness about the history and experiences of Indigenous Peoples. We developed our training with input and guidance from partners such as Reconciliation Canada and our own Indigenous employees. The training features their stories and perspectives, which has made the information and messages more relatable.

By the end of 2018, 95% of all employees at a director level and above, and 56% of employees company-wide, had completed Aboriginal awareness web-based training. Additionally, 40% more employees completed the training in 2018 as compared to 2017.

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After requests from Suncor employees and a number of community partners who wanted to share the training within their organizations, we made the web-based training module broadly available (free of charge) on [Suncor.com](http://Suncor.com) in the spring of 2017.

We also offer a more comprehensive classroom session for employees that expands on the awareness created through the web-based training. It builds understanding about the historic and current relationship between Indigenous Peoples and all Canadians through storytelling and meaningful discussion. In 2018 more than 1,100 employees participated in classroom training.

Employees who've taken the training have given some great feedback. A participant in the Introduction to Aboriginal awareness classroom training reflected "I always thought I had an understanding of the history of Indigenous Peoples in Canada. After today, I now know there is so much I do not know."

## ABORIGINAL EMPLOYEE NETWORK

Suncor's [Aboriginal Employee Network](#) (AEN), now known as Journeys, is our employee resource group that supports advancing Indigenous inclusion at Suncor. With more than 700 members, the network is structured around four focus areas called circles.

The Aboriginal Awareness Circle specifically supports cross-cultural sharing by increasing awareness and understanding of Indigenous experiences within Suncor. For instance, the AEN distributes a regular e-newsletter and shares cultural insights, maintains a page on Suncor's intranet that highlights a wide variety of topical resources (books, movies, websites, music and podcasts), and hosts lunch and learn sessions.

AEN ambassadors also attend cultural and community events. In 2018, this included the [Indspired Youth Experience](#) and awards and gala in Winnipeg, the Calgary Folk Fest where Suncor sponsors the Great Spirits Indigenous program, and pow wows and Treaty Days throughout areas where Suncor operates.

*"It opens up conversations, breaks stereotypes and increases people's comfort to ask questions. This is an opportunity for everyone to promote Indigenous awareness and inclusion across the company; I call them 'reconcili-actions.'"*

– Shantel Stotschek, a contracts systems administrator at Suncor and member of the AEN

The AEN recently introduced a series of cultural insight slide decks company-wide covering various topics, including the significance of medicine wheels, smudging ceremonies, and the Truth and Reconciliation Commission report. These are being used by employees in a variety of ways, including sharing knowledge at the beginning of meetings.

## CULTURAL LEARNING OPPORTUNITIES

We are creating opportunities for employees across Suncor to participate in cultural learning experiences. These experiences enable direct engagement and cultural exchange between Indigenous and non-Indigenous people.

We are working with partners, including those who manage Suncor offices and facilities, to establish policies that allow for the incorporation of Indigenous ceremonies and cultural events on our premises. This includes work with Brookfield on a new smudging and pipe ceremony policy in our Calgary office.

In early August 2018, Suncor and the Fort Chipewyan Métis partnered to offer approximately 20 Suncor leaders in the Wood Buffalo region an opportunity to visit the community and participate in a fishing day.

"For me it provided a much clearer understanding of the challenges the community faces due to its remoteness – things like food, housing and education that many of us take for granted," reflected Stephen Young, a project director at Suncor. "I also gained a better understanding of the concerns of oil sands development and the impacts it can have on their community."

For a number of years we have also regularly offered [Rediscovery's](#) First Contact activity to leaders and employees.

This cross-cultural learning opportunity is a way of experiencing how different values, customs and social traditions can sometimes lead to misunderstandings, particularly during first contact between peoples.

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Brent Janke, senior vice president of regional services at Suncor, shared, “It was an emotionally powerful event and experience. It dispelled myths and answered questions, and also showed it’s possible for peoples who have dramatically different experiences to come together and chart a path to understanding. It was an opportunity to connect as human beings, and build community.”

In 2018, we introduced another cultural experience, the [KAIROS Blanket Exercise](#).

The KAIROS Blanket Exercise is a unique, interactive and participatory history lesson developed in collaboration with Indigenous Elders, knowledge keepers and educators. It covers more than 500 years in a 90-minute experiential workshop that aims to foster understanding about our shared history as Indigenous and non-Indigenous Peoples.

*“It was incredibly emotive, gave me more empathy and the moving on and around the blankets helped to make it real. I feel I entered with a good foundation and understanding of the history, and there was still so much I learned.”*

– Jodi Drake, a human resources director at Suncor

## MEASURING OUR PROGRESS

We’re measuring culture shifts in a number of ways along the journey. One way to measure awareness building and changing attitudes is through the number of participants attending the online and classroom-based Indigenous awareness training.

Conducting pre and post-surveys gives us an understanding of changes in thinking. We’re also starting to use developmental evaluation frameworks to assess the effectiveness of our work, to look for shifts in perception, attitudes and behaviours, as well as identify emerging opportunities.



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Youth participants at Indspire.

## PARTNERING WITH INDIGENOUS YOUTH

Partnering with Indigenous youth to develop their leadership potential.

Our partners and youth have taught us that organizations and programs rooted in culture and reconciliation lead to pride in self and culture. Today's youth are tomorrow's leaders – that's why we're focused on building stronger connections with Indigenous youth.

Through the [Suncor Energy Foundation](#) (SEF), we are supporting our partner organizations working towards innovative solutions for Indigenous communities such as youth engagement, cultural opportunities and leadership/education programs to provide pathways towards a successful future.

### SUPPORTING INITIATIVES

It starts with partners who share our vision. Through the SEF strategic funding priority, we believe we can be a catalyst, working with others, and connecting and supporting our communities. Some partners leading change in community include:

- [Actua](#): Inspires youth in Indigenous communities across Canada to see science, technology and math as a potential career path by using connection to culture and communities.

- [Banff Centre](#): Indigenous Leadership programs at Banff Centre provide leaders an opportunity to gain a better understanding of how to establish a strategic direction for their communities and organizations, implement that plan through focused effort, and measure performance.
- [Bridges Social Development](#): Works with Indigenous youth in southern Alberta to find their purpose and voice while developing community leadership opportunities.
- [Learning Through the Arts](#): Works with Indigenous students in the Regional Municipality of Wood Buffalo to use arts and culture as tools to understand curriculum and has significantly improved graduation rates in the region.
- [Right to Play](#): Promoting Life Skills in Aboriginal Youth (PLAY) program is guided by an Indigenous community development model. PLAY partners work with communities to build capacity through multi-faceted programming, training and one-on-one support of community mentors.
- [Student Energy: SevenGen 2019](#) was the first Indigenous Student Energy Summit which brought together 200 Indigenous and non-Indigenous youth from across Canada to explore how to unite communities, build relationships and break social barriers in the energy conversation.

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## SUPPORTING DEVELOPMENT OF FUTURE INDIGENOUS LEADERS

Each year, Suncor and the SEF, with community partners, host a variety of initiatives which bring Indigenous youth and Suncor team members together for shared learning and support for youth to discover their leadership skills.

### Spaces to share traditional knowledge

In recognition of the start-up of the Fort Hills project, Suncor presented authentic, handmade 18-foot teepees to five schools in the Regional Municipality of Wood Buffalo. Traditionally the teepee was the home of nomadic Indigenous Peoples, and it is symbolic of traditional Cree and Dene teachings.

“There was an opportunity to help ‘walking in two worlds’; Indigenous methods and western methods,” says Joy Flett an Indigenous and community relations advisor at Suncor. “The teepee creates opportunities for community members, teachers, youth and community partners to engage in meaningful teachings of Indigenous heritage and culture.”

Indigenous peoples of the plains use 15 teepee poles to create the structure; each pole having a distinct meaning. These teachings include: obedience, respect, humility, happiness, love, faith, kinship, spiritual cleanliness, thankfulness, sharing, strength, good child rearing, hope and protection.

To ensure the knowledge and teachings would be understood, the youth of the region cut and dried their own teepee poles. “Every time a pole is added, a rope goes around binding that pole into place,” says Joy. “That rope is a sacred bond, binding all the teachings together until they are all connected. This has been a great way for us to share opportunities for traditional knowledge holders to pass down traditions to Indigenous youth.”

*Since oral history is the basis for knowledge to be handed down through generations, the teepee provides a cultural space for Elders to come and talk to youth about medicines and traditions.*

### Learning together

In 2018 Suncor again had the opportunity to host a group of Indigenous youth from the [Siksika Nation](#) at our office in Calgary.

Each student was paired up with a Suncor employee from the Aboriginal Employee Network, and they spent the day learning from each other. The youth shared details about living in a First Nation community, and Suncor team members reflected on what it takes to be part of the Suncor team.

This initiative was organized by Suncor’s Indigenous and community relations and human resources teams, in partnership with [Bridges Social Development](#) and the SEF.

Bridges is a non-profit organization founded for the purpose of capacity-building and training for professional and youth leaders in various communities, including First Nation communities like Siksika. The Suncor Energy Foundation has been a supporter of Bridges since 2011.

### Indspiring youth and educators

Suncor and the SEF have a long-standing relationship with [Indspire](#), an Indigenous-led registered charity whose vision is to enrich Canada through Indigenous education and by inspiring achievement. This includes a number of scholarships and bursaries supported by Suncor and Petro-Canada.

The youth participants who join us are selected by their communities because they are considered future leaders. In 2018 the Winnipeg trip included visits to the Canadian Human Rights Museum and Red River College, along with the *Soaring Indigenous Youth Empowerment Gathering* where participants explored post-secondary and career options.

“There were countless connections and memories made on this trip for everyone,” recalls Sheila Innes, general manager of Indigenous and community relations at Suncor. “I came away with many learnings, including a much greater awareness of the challenges, but also the huge possibility and opportunity ahead – for youth, communities, and all of us as Canadians. The future looks bright.”

*Since 2003, Suncor has also brought more than 275 Indigenous students to the Indspire awards as part of a multi-day experience called the Indspired Youth Experience.*

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Suncor and the SEF also support the Indspire National Gathering for Indigenous Education. The annual conference brings together more than 800 educators and community partners from across Canada to take part in a variety of workshops and presentations focused on the success of K-12 Indigenous students.

“Indigenous education is a reciprocal process that includes cultures, traditions, and histories and engages students, staff, parents, and community partners to collaborate for student success,” says Roberta Jamieson, president and CEO of Indspire. “Achieving success in Indigenous education is critical for the future of Canada. The National Gathering is a place where educators and partners can share their experiences and work together to improve the educational outcomes.”

In addition to the conference, participants also take part in the [Guiding the Journey: Indigenous Educator Awards](#). The awards recognize individuals for having innovative and impactful teaching practices, advocating for resources and culturally-based curricula, and helping Indigenous students reach their full potential.

### Indigenous Youth Advisory Council

In 2012, Suncor created its first Aboriginal Youth Engagement Strategy. The strategy is focused on addressing the inequities Indigenous youth face.

Building on the strategy, an idea for an Indigenous Youth Advisory Council (IYAC) emerged from discussions with several young Indigenous leaders, including those who had attended previous SEF [gatherings](#) and participants from the [Summer Aboriginal Student Program](#). The group worked together extensively in 2018 to help create draft terms of reference for the council and how they could work together.

IYAC consists of 10 young leaders between the ages of 18 and 30 from communities near Suncor’s operations. On February 20, 2019, the IYAC formally opened with a pipe ceremony at the Suncor Energy Centre. IYAC members, Elders from Suncor’s operating communities and Suncor leaders were all present.

The IYAC is an opportunity for Suncor and Indigenous youth to share, listen, reflect and act on issues of mutual interest that are impacting communities and the lives of Indigenous youth. Aligned with our social goal, it also supports young Indigenous leaders in developing their leadership potential while providing opportunities to participate in the energy system. The IYAC will act as a consultative group for the SEF, Suncor and the VP Aboriginal Forum.

### MEASURING OUR PROGRESS

In 2018, we measured year-over-year increases in two areas:

1. The number of opportunities for youth leadership training and experiences
2. The number of opportunities for Suncor employee and youth interactions

We continue to evaluate our measurements to ensure we are driving positive outcomes with respect to supporting Indigenous youth leadership potential. Future years may include further use of storytelling, to demonstrate how we are supporting the progress of Indigenous youth.

Ongoing learnings continue to measure much of this work, which is shared through our engagement with our SEF [transformative community partners](#). We also continue work with our own employees through the Aboriginal Employee Network (AEN), including the AEN ambassador program. The program is designed to create meaningful interactions between ambassadors representing a broad cross-section of our Indigenous employees and youth in schools and communities.



An Indigenous knit scarf.

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Petro-Canada station owned and operated by the First Nations band NK'MIP.

## PARTNERING WITH INDIGENOUS BUSINESSES AND COMMUNITIES

Increase revenue to Indigenous businesses and communities.

### PETRO-CANADA RETAIL AND WHOLESALE SITES

Over the last several years, we have successfully grown relationships and expanded business development opportunities with Indigenous communities including through Suncor's [Petro-Canada brand](#).

Petro-Canada began partnering with First Nation business owners in 1997. In 2018, four new retail sites opened, bringing the number of Petro-Canada-branded retail sites owned and operated by First Nations across Canada to more than 30. One new wholesale site was also opened, for a total of nine First Nation owned or leased wholesale sites.

As part of our ongoing efforts to deepen relationships with station owners and communities we hosted owners in Calgary for a business conference in early 2019. The conference was a chance to take a moment to celebrate together, while also sharing learnings and best practices from across the country.

Mutually beneficial business relationships between Suncor and Indigenous communities leverage our Petro-Canada brand and communities' goals for economic development.

*“There is significant pride in the community ownership of this [Petro-Canada] station and the return on investment that we are able to put back in the community, including creating new full time jobs. All revenues are utilized for growth and for programs and services offered to our membership. We are very proud of the legacy it is creating.”*

– Chief Rosanne Casimir, from Tk'emlups te Secwepec in British Columbia, where one of the sites is located

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We want to continue to work together with our partners as well as expand these efforts and increase our business with Indigenous communities because it makes good economic sense – for Suncor and for Indigenous Peoples across Canada.

## INCREASING INDIGENOUS SUPPLIER-SPEND

Suncor has a long history of working with Indigenous suppliers and communities, including in the Regional Municipality of Wood Buffalo (RMWB). Indigenous companies provide a broad range of services and expertise to help us run our business, including lodging, supplying materials like pipes and truck tires, and providing expertise to help us maintain information technology systems.

Suncor defines an Indigenous business as a company owned and operated, either wholly or in part (i.e., greater than or equal to 51%) by an Indigenous community or entrepreneur. This is in line with the [Canadian Council of Aboriginal Business](#) (CCAB) and [Northeastern Alberta Aboriginal Business Association](#) (NAABA) definitions.

In 2015, as part of our social goal we set a target to spend \$600 million annually with Indigenous businesses by 2025.

We have also spent more than \$5 billion with Indigenous suppliers since 1999. This includes both direct spend and indirect spend where non-Indigenous suppliers sub contract to Indigenous suppliers.

Though we are proud of this achievement and proud of the many Indigenous businesses we have partnered with to make this happen, our efforts are not only about the dollars we spend. More important is how we work together and we know there is still a lot of work to do here.

Our future business development efforts will include working with Indigenous businesses to focus on capability and capacity development. We also remain focused on building awareness and capability within our own teams so engagement with businesses and communities is thoughtful, continuous and – ultimately – a part of Suncor culture.

We also want to apply what we've learned over the last 20 years more consistently across our businesses, so more Indigenous entrepreneurs and communities have the opportunity to participate in and benefit from our operations.

*In 2018, Suncor spent \$703 million with 83 Indigenous businesses, including 24 new suppliers. This exceeded the spend target seven years ahead of our goal.*

In 2018, this meant establishing the first **Indigenous business engagement strategy** in our Downstream business. As a result, we doubled the amount we spent in 2017 saw a year-over-on Indigenous business spend within Downstream.

“We’ve found by opening doors and building relationships with Indigenous businesses, we’ve become aware of many companies that can provide competitive services which meet our safety and quality standards,” says Dean Wilcox, vice president of Suncor’s Edmonton refinery. “This is a win-win as we obtain the services, and the income supports Indigenous businesses and communities.”

We also know we can’t do this alone. Together with our suppliers, contractors, and sub-suppliers we are looking for opportunities throughout our value chain, and encouraging others to get engaged. This is part of our standard evaluation processes when awarding contracts.

In 2018, Mark Little also stepped forward to co-chair the Canadian Council for Aboriginal Business, the national Aboriginal Procurement Champions program. The effort is designed to challenge companies to engage more Indigenous businesses in their supply chains.

“I believe there are a lot of companies out there who want to engage but don’t know where to start. That’s where the Champions program comes in,” says Mark Little, president and chief executive officer.

Working with Indigenous businesses and communities is essential to creating mutually beneficial partnerships, and it is one thing Suncor can do to contribute to economic reconciliation with Indigenous Canadians. This is aligned to the [United Nations Declaration on the Rights of Indigenous Peoples](#) (UNDRIP) and the [Truth and Reconciliation Commission’s](#) Call to Action for corporate Canada.

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## COMMUNITY PARTNERSHIPS

In 2017, Suncor signed two significant business partnerships with First Nation communities, the East Tank Farm Development and Petro-Nor.

The signing of these agreements was the result of many years of relationship building, hard work, and discussions to identify and understand areas of mutual interest. Through the process, we developed greater understanding and trust – and we worked collaboratively to achieve this.

These partnerships demonstrate a positive evolution in our long-term relationships and new ways that we are working together with communities. We continue to look for new mutually-beneficial opportunities to engage communities across our business.

## PLANNING FOR LONG-TERM RELATIONSHIPS

Suncor has developed Joint Business Development Plans (JBDPs) with key communities in RMWB. The JBDPs provide structure on how we work together and collectively focus on key objectives. These plans include annual work plans that help Indigenous communities to direct efforts where there is a possibility to increase business, and that help Suncor track suppliers' capabilities.

## SUSTAINING OPPORTUNITIES

Relationships are essential to advancing business opportunities. Meaningful participation requires the ability to understand each other's motivations, strengths and limitations. It can also require the willingness to have challenging conversations in an authentic and respectful way. This kind of dialogue is important to having long-term, mutually beneficial relationships.

Our approach focuses on listening, being transparent and honest about the opportunities that exist, and being fair and firm when explaining decisions – no matter the outcome.

While we monitor our supply chain spending and want to continue to grow our work with Indigenous businesses, we are also mindful that it must be done in the right way. We will continue to be commercially responsible and ensure agreements are of benefit to all parties involved, and not simply focused on achieving a set dollar value or target. Suncor's engagement with Indigenous suppliers is part of the way we do business for procurement opportunities across Canada.



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# IMPROVING INDIGENOUS WORKFORCE DEVELOPMENT

We're improving Indigenous workforce development through hiring, retention and advancement of Indigenous employees across our businesses.

Our focus on advancing Indigenous workforce participation is strengthened by the numerous collaborative partnerships and relationships we continue to build with Indigenous communities, leaders and teams within Suncor, and external stakeholder groups and agencies who share similar goals. We recognize we have more work to do in this area, and continue to listen, learn, and engage with others to make positive changes.

## SUPPORTING INITIATIVES

### Summer Aboriginal Student Program

The Summer Aboriginal Student Program (SASP) supports our social goal of building greater mutual trust and respect with Indigenous Peoples in Canada and aligns with our belief that today's youth are tomorrow's leaders. This program offers Indigenous students an opportunity to gain valuable work experience at one of our locations. It is open to Indigenous students who are starting or returning to a post-secondary program on a full-time basis in September.

*In 2018, participation in the program grew 400%, from 17 students in 2017 to 72 students. Students worked in roles in many areas of Suncor, including Sarnia, Edmonton, St. John's, Calgary and Wood Buffalo.*

Here are a few reflections from participants:

*"It felt great to be a part of the team, and to see the difference that I was able to make in a short period of time. I learned so much, and working here has opened my mind to new possibilities that I never thought I could be a part of."*  
– Sarnia participant

*"For once I did not feel 'used' or a 'token' at a company. I felt valued as an employee and there was never a question of that."* – Wood Buffalo participant

### Indigenous workforce development advisor

Our Indigenous workforce development advisor works directly with Indigenous communities in Alberta's Wood Buffalo region to understand community needs and initiatives, share information on Suncor's workforce needs, and collaborate to strengthen the employment readiness of potential Indigenous candidates.

Fort McKay First Nation (FMFN) is one of many communities the advisor works with. Noma Mangena, a member of FMFN's Skills, Employment and Training (SET) committee, reflects, "It's helped make us aware of near and long-term employment needs, find out about career and job fair information sessions and scholarship opportunities, and connect job seekers with Suncor team members."

*The advisor also provides insights, advice and Indigenous wisdom to Suncor leaders and teams across the enterprise, to help them build trusting relationships with local Indigenous communities, and ensure people and workplace processes, programs and strategies support Indigenous inclusion.*

### Greater Aboriginal Participation Partnership (GAPP)

In 2018, an opportunity was identified to work collaboratively with key contractors to facilitate and provide contractor employment opportunities for Indigenous Peoples in the Rural Municipality of Wood Buffalo (RMWB).

In partnership with Ledcor, CEDA, the Athabasca Tribal Council, Rupertsland Institute and Keyano College, we developed a pilot, the Greater Aboriginal Participation Partnership (GAPP).

Twelve participants have been recruited to the five-week program, which, through work at either Ledcor or CEDA, provides an introduction to the business skills and technical training needed for specific roles in the oil and gas industry. Suncor

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provided project management, facilitation, and Indigenous workforce development expertise to support the pilot.

Following the pilot, evaluation of the GAPP's performance indicators will determine how this initiative could be converted to a more sustainable and ongoing program.

### Indigenous mentorship program

Suncor's Indigenous mentorship program creates opportunities for shared learning among Indigenous and non-Indigenous employees, while supporting career development and success. It contributes to an inclusive environment and positive work experiences, and provides learning opportunities for those wanting to increase their knowledge of Indigenous culture, history and lived experiences.

The program is rooted in "friendship, guidance, direction and support," and focuses on four aspects of well-being in the workplace: mental, emotional, spiritual and physical. We reviewed the program in 2018, with a 2019 goal to increase participation and bring together more western and Indigenous ways of knowing in the program.

*"My time in the program was very good. We built trust and community as we shared many stories about our heritage, cultures and families and how we speak to these."*

– Dwayne McLeod, senior advisor in tailings

### Aboriginal Employee Network

The Aboriginal Employee Network is an employee resource group developed by and for Suncor employees wanting to play a part in advancing Indigenous inclusion and creating a safe and supportive workplace culture for Indigenous employees. The network has grown to more than 700 Aboriginal and non-Aboriginal members since its launch in the summer of 2015. The network is structured around four focus areas being advanced by small work teams called circles. Each circle has five to eight members from across Suncor's businesses who meet regularly to develop programs and initiatives:

- 1. Aboriginal Community Circle:** build a community of support for Indigenous employees at Suncor
- 2. Aboriginal Outreach Circle:** develop a pool of Suncor ambassadors to visit Indigenous communities, with a focus on youth
- 3. Aboriginal Advisory Circle:** create a way for Indigenous employees to advise Suncor on how the company works with Indigenous Peoples
- 4. Aboriginal Awareness Circle:** to increase awareness and understanding within Suncor of Indigenous experiences

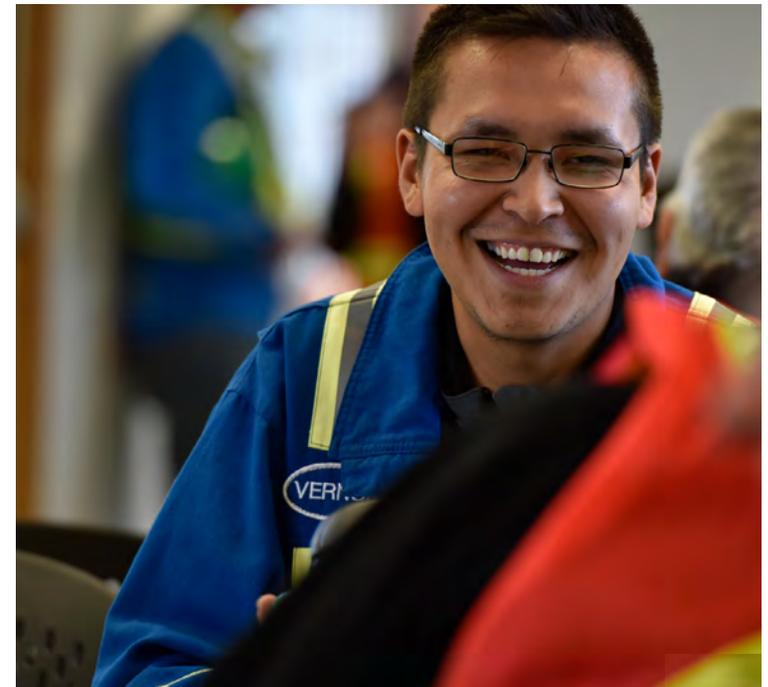


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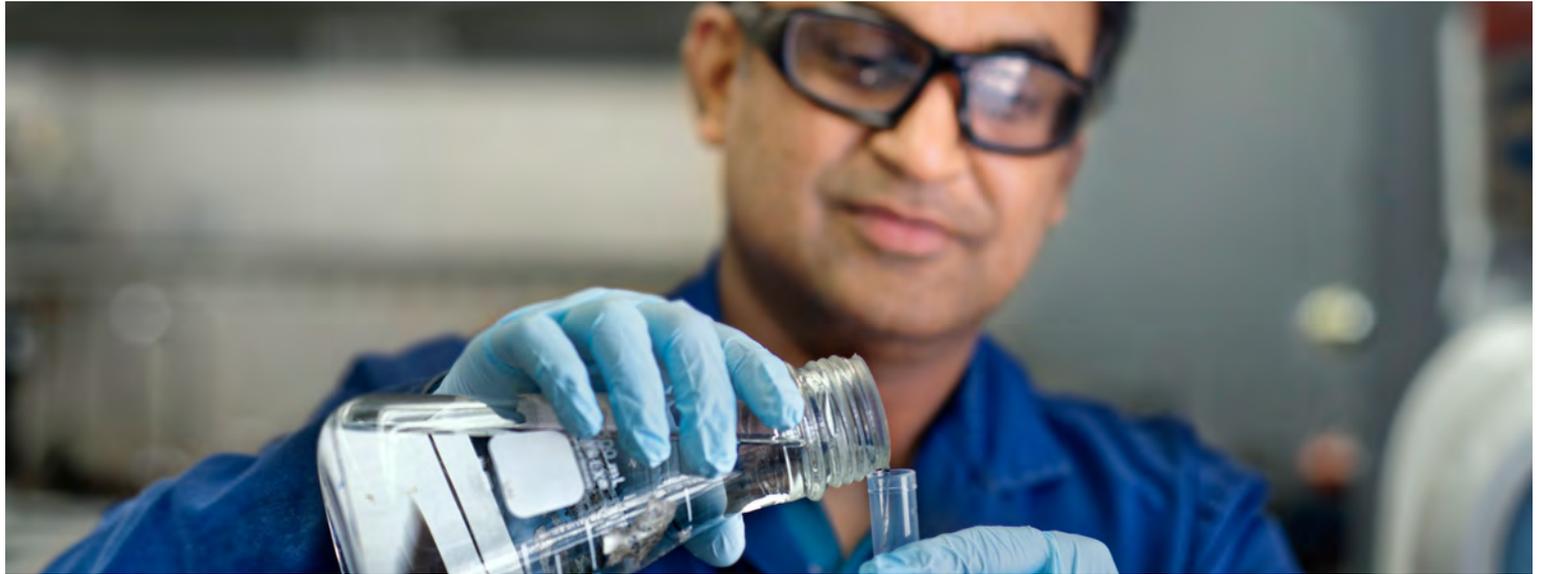
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## INNOVATION

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

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## OUR APPROACH TO TECHNOLOGY AND INNOVATION

We take a balanced approach to technology development, focusing on continuous improvement technology (step-change improvements in existing processes) and strategic technology (game-changing, disruptive).

In 2018, we invested approximately \$635 million in technology development and deployment and digital technologies as part of a robust strategy to optimize current assets and develop next-generation facilities.

Our technology development efforts largely focus on four specific outcome areas in environmental impacts and cost management:

1. In situ
2. Mining and tailings
3. Upgrading and refining
4. Closure

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Learn more about the technologies we are advancing in each of these areas:

TECHNOLOGY DEVELOPMENT & DEPLOYMENT

	DISCOVER	DESIGN	DEVELOP	DEPLOY
IN SITU	<ul style="list-style-type: none"> <li>Wellbore technologies</li> <li>Novel subsurface technologies</li> <li>Alternative gas co-injection</li> </ul>	<ul style="list-style-type: none"> <li>Solvent+</li> <li>Wellbore heating</li> <li>Superheat</li> <li>Electromagnetic (EASE)</li> <li>ESEIH®</li> </ul>	<ul style="list-style-type: none"> <li>High Temperature Reverse Osmosis Produced Water Treatment</li> <li>In Situ Demonstration Facility</li> </ul>	<ul style="list-style-type: none"> <li>Steam-solvent technologies                             <ul style="list-style-type: none"> <li>ES-SAGD (Expanding Solvent - Steam Assisted Gravity Drainage)</li> </ul> </li> <li>Non-condensable gas co-injection pilots (Firebag and MacKay River)</li> <li>Well-bore enhancements                             <ul style="list-style-type: none"> <li>Multilateral well pilot (Firebag)</li> <li>Electric Submersible Pump pilots</li> <li>Flow control devices M-Tool pilot (Firebag)</li> </ul> </li> </ul>
MINING	<ul style="list-style-type: none"> <li>Froth Treatment Tailings</li> </ul>	<ul style="list-style-type: none"> <li>Non-Aqueous Extraction</li> </ul>		<ul style="list-style-type: none"> <li>Paraffinic Froth Treatment (PFT)</li> <li>Water Technology Development Centre (WTDC)</li> <li>Autonomous Haulage System (AHS)</li> </ul>
UPGRADING & REFINING		<ul style="list-style-type: none"> <li>Partial upgrading                             <ul style="list-style-type: none"> <li>Mild thermal cracker technology</li> <li>De-asphalting</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>Wastewater treatment Membrane Ultrafiltration</li> </ul>
RECLAMATION				<ul style="list-style-type: none"> <li>Demonstration Pit Lake</li> <li>PASS (Permanent Aquatic Storage Structure)</li> <li>Nikanotee Fen</li> </ul>



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## COLLABORATION IN TECHNOLOGY

In some cases, we lead development and deployment of new technologies on our own. In most areas, however, we collaborate through consortiums or with third parties. Collaboration is a key enabler to the oil sands industry's efforts to develop and deploy new technologies.

## COSIA

Suncor leads or participates in many technology studies and projects through Canada's Oil Sands Innovation Alliance (COSIA), an alliance of companies representing 90% of oil sands production. By focusing on five environmental priority areas – greenhouse gases, land, tailings, monitoring, and water – COSIA brings people together to face specific environmental challenges in an attempt to shorten innovation timelines across the oil sands industry. To date, COSIA's combined efforts have involved:

- \$1.4 billion portfolio of nearly 1,000 technologies
- 294 current, active projects
- Suncor participating as a COSIA member company in the NRG COSIA Carbon XPRIZE
- Suncor is currently leading 88 COSIA studies and Joint Industry Projects including the [Water Technology Development Centre](#) which began operations in June

## Evok Innovations

Suncor is a co-founder of Evok Innovations, along with the BC Cleantech CEO Alliance and Cenovus Energy to accelerate early-stage technologies.

Evok is a Vancouver-based fund that offers a unique approach to innovation, combining the pace and creativity of a Silicon Valley startup with the experience and insight of industry insiders. They drive innovation by deeply understanding industrial challenges, leveraging a global network of entrepreneurs to find solutions, and providing the investment, mentorship, and market access to accelerate deployment for game changing results.

Through the partnership, Evok invests in a global portfolio of innovative companies to address the most pressing and environmental challenges of the oil and gas industry. An important feature of Evok is the access provided to the end customers (Suncor and Cenovus) at an early stage in the life of the start-up companies.

Since 2016, Evok has funded 12 technology companies:

- **DarkVision Technologies:** new ultrasound-based imaging technology for delivering ultra-high resolution 3D models of oil and gas wells
- **Ekona Power:** a new solution to produce industrial scale hydrogen that is both cheap and clean by converting natural gas into hydrogen, clean power and pure CO<sub>2</sub> that can be easily stored or used
- **Expeto Wireless:** offers a software-based platform that removes barriers to digital transformation, by providing enterprises with their own private, agile and scalable cellular networks but deploy it like Wifi – globally
- **HARBO Technologies:** developed the world's smallest and lightest containment system for marine oil spills

- **Kelvin:** uses the collective intelligence of human observation and sensor information to improve critical decisions, enabling physical systems to optimize and operate themselves
- **Metabolik Technologies:** developing an efficient and scalable bioremediation platform that enables microbes to reduce the concentration of naphthenic acids and other components found in oil sands tailings ponds
- **Mosaic Materials:** utilizes metal-organic frameworks to selectively remove impurities such as CO<sub>2</sub> from gas mixtures for a range of applications; from life support systems on submarines to the emissions of power plants
- **Opus 12:** developing a device that recycles CO<sub>2</sub> into cost-competitive chemicals and fuels
- **Osprey Infomatics:** enables industrial customers to reduce operational costs and mitigate environmental and safety risks through intelligent visual monitoring. The company's cloud platform is powered by artificial intelligence and integrated with industrial sensors and systems
- **Quidnet Energy:** leverages mature oil and gas technology to develop wells into energy storage facilities for large-scale renewables integration and grid management
- **Rotoliptic Technologies:** developed a revolutionary method to move high viscosity fluids with high solids content. Its pump design dramatically improves fluid transfer efficiency and pump durability, resulting in increased productivity, reduced downtime and lower total cost of ownership
- **Syzygy Plasmonics:** develops chemical reactors to provide a low-cost, low-emission hydrogen production system for light and heavy-duty transportation

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## Clean Resource Innovation Network

Suncor is an active member of the Clean Resource Innovation Network (CRIN), which aims to position Canada as a global leader in producing clean hydrocarbon energy from source to end use.

The network brings together oil and gas industry professionals, innovators, investors, start-ups, policy-makers, incubators and accelerators, researchers and students to advance technologies aimed at improving our economic and environmental performance.

The network focuses on creating the connections for our resource sector to advance technologies for use in Canada and with the potential for export to global markets emphasizing the potential impact our country can contribute to help address global challenges.

## STRATEGIC INVESTMENTS AND PARTNERSHIPS

Suncor also monitors technologies being developed by external parties to determine if, and when, an investment by us could make sense to advance a technology and adapt it for our business. This involves funding outside companies whose technology ideas align with the needs of our operations or businesses.

This type of technology development is carefully managed to ensure it provides economic and environmental benefits to Suncor. It is a key strategy in a world of fast-changing products and services.

Examples of investments include:

- **Emerald Technology Ventures:** a global leader and investor in emerging industrial technology investments.
- **Enerkem Inc.:** a company which manufactures biofuels and renewable chemical products from household garbage that would otherwise be landfilled.

- **LanzaTech:** a biofuels firm based in the United States that is advancing a proprietary gas phase fermentation technology to recycle waste gas and greenhouse gas emissions into low-carbon fuels and chemicals.
- **Academic partnerships:** Suncor is a long-time supporter of research and program work at leading Canadian universities.

## DIGITALIZATION

We're already extensively using information technology in our business but the increasingly digital world brings new and exciting opportunities. As part of our approach to innovation, we are harnessing digital technology in areas such as improved data, advanced analytics and automation to help improve the safety, productivity, reliability and environmental performance of our operations.



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# IN SITU TECHNOLOGIES

We are advancing a portfolio of in situ technologies with the potential to lower the carbon intensity of producing bitumen.

## NEXT GENERATION IN SITU EXTRACTION

Technology and innovative thinking have enabled profitable, sustainable oil sands development over the past five decades. Our industry is now addressing different challenges – to decrease greenhouse gas (GHG) emissions, water consumption and land impacts. Within this context, we believe the development and deployment of new technologies have key roles to play in the continued development and growth of our oil sands production.

Suncor's current technology for in situ production, steam-assisted gravity drainage (SAGD), employs parallel pairs of 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 the energy requirement. Using steam, the reservoir is typically heated to 200°C or more to get the bitumen to flow. The generation of the required steam necessitates large amounts of water handling and treatment while consuming a significant amount of natural gas that generates greenhouse gas emissions.

In 2016, we announced a [greenhouse gas goal](#) that aims to harness technology to reduce the total emissions intensity of the production of our oil and petroleum products by 30% by 2030. To help meet that goal we need to develop and deploy technologies that go beyond today's SAGD.

*“We are advancing a portfolio of in situ technologies to lower the carbon intensity of producing bitumen and improve the cost competitiveness.”*

– Gary Bunio, general manager, Oil Sands, strategic technology, Upstream

We are using what we have learned implementing SAGD over the past 20 years to progress a range of technologies that offer the potential to deliver significant improvements in the following areas:

- energy usage and GHG emissions
- water use and treatment
- production rates and resource recovery
- land impacts
- capital and operating costs
- product quality and value

Our initial piloting and simulation results of these technologies indicate there is significant potential for GHG emissions reductions for existing facilities (brownfield) and up to 50% or more for new growth facilities (greenfield). In addition, we anticipate the downstream emissions associated with refining the product will be reduced. These technologies may deliver a lighter, lower carbon-intensity crude oil, resulting in less diluent required for transportation and further reducing the lifecycle GHG emissions for these technologies.

“We believe these technologies, if successful, would allow oil sands-derived oil to have GHG intensities at or below the average North American barrel,” says Gary. “In our view, a likely solution will be a hybrid of the many innovative approaches and technologies we are currently evaluating.”

Technology and innovation will help shape the future of energy production and consumption. We take a portfolio approach – advancing multiple technologies at any given time, with the understanding that not all of them will be a success. The technologies profiled in this Report on Sustainability reflect only a portion of the many initiatives our teams are currently working to understand and advance.

Suncor works extensively with research organizations, technology providers and universities, as well as with our own technical experts to identify, evaluate and advance early stage technologies. Our current areas of focus include:

- wellbore technologies, including flow control devices
- steam enhancements, including various additives
- solvent-based recovery processes
- novel subsurface recovery processes beyond steam and solvents

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## SOLVENT+

Suncor is focused on solvents as an alternative to steam in recovering bitumen from in situ reservoirs. Our current focus in solvent recovery processes builds on our experience and background knowledge, gained from participation in experiments going back more than 20 years.

In the solvent-based processes that Suncor is pursuing, a light hydrocarbon solvent such as propane or butane is used as the primary means to mobilize bitumen. The increased temperature of the reservoir maximizes recovery efficiency.

Currently, Suncor is advancing, to the pilot phase, a suite of solvent 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 heating

If successful, Solvent+ offers the potential for several significant environmental improvements over SAGD including:

- reduction in GHG emissions intensity by 50% to 70%
- elimination of process water
- reduction in the surface footprint
- reduction in transport diluent requirements
- reduction in carbon content of produced oil
- potential to unlock additional resources

## Solvent+ wellbore heating

This is a variant of Solvent+ wherein the primary mode of heat addition to the process is in the horizontal section of the solvent injection well. The leading wellbore heating technology under consideration uses electric resistive heating (ERH) which relies on highly resistive metals to generate heat when current is passed through them, similar to a toaster wire.

Suncor is currently planning an ERH pilot with operations expected to begin in 2020.

## Solvent+ superheat

This is a variant of Solvent+ wherein the primary mode of heat addition to the process is at the surface through the heating of solvent well beyond its vapourization temperature. Once superheated, the solvent is added to the reservoir through the solvent injection well.

## Solvent+ electromagnetic (EASE)

Also known as electromagnetically assisted solvent extraction (EASE), this is a variant of Solvent+ wherein the primary mode of heat addition to the process is in the reservoir through the use of electromagnetic (EM) energy.

Much like a microwave oven, this process directly heats the water in the reservoir which in turn heats and refluxes the solvent in situ.

## ESEIEH®

To advance the EASE (Solvent+ EM) technology, we have done extensive work over the past six years through the Enhanced Solvent Extraction Incorporating Electromagnetic Heating (ESEIEH®) field pilot at our Dover site.

This field pilot is a project that has been supported by a consortium of partners. In addition, Alberta Innovates has agreed to support the pilot with a \$1.5 million dollar contribution.

ESEIEH® uses wells configured in horizontal pairs much like a SAGD operation. With the ESEIEH® process, steam is replaced by electromagnetic heating and solvent.

We anticipate having results from the ESEIEH® pilot in 2020 that will allow us to more fully evaluate the commercial potential of the Solvent+ EM technology.

## In Situ Demonstration Facility

The In Situ Demonstration Facility (ISDF) will be a place where we can optimize and test our Solvent+ technologies. This facility will be flexible in its design enabling Suncor to pilot and test multiple heating options

Suncor expects to test electric resistive heating (ERH) and superheat in the first phase of the ISDF. We anticipate a second phase that would test the EASE technology once the current ESEIEH® pilot is completed.

The current project schedule has site preparation near MacKay River beginning in 2019 with first production in early 2022.

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## STEAM ENHANCEMENTS

While Suncor is pursuing solvent-dominated recovery technologies for future growth, steam is the driving recovery mechanism for our existing operations and near-term growth opportunities.

The steam enhancements technology portfolio encompasses all improvements to the SAGD recovery process including the addition of solvent, non-condensable gases and chemical additives as well as improvements to start-up processes. These technologies offer the potential for achieving meaningful reductions in GHG intensity and water usage rates.

Suncor continues to advance this program through simulation, piloting and demonstration. The current program focus includes:

- ES-SAGD
- Non-condensable gas Co-injection

### 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. We expect the addition of the hydrocarbon solvent to accelerate bitumen production and reduce steam requirements of the recovery process – resulting in a net reduction in process water requirements and greenhouse gas emissions of 15% or greater.

A key component of our evaluation of this technology is enhancing our understanding of solvent retention and recovery. In addition to extensive laboratory studies and reservoir simulation, Suncor is conducting a commercial scale demonstration.

This pad scale demo commenced in February 2019 at Firebag and will be key in determining the viability of this technology.

## Non-condensable gas co-injection

Later in life, mature SAGD reservoirs exhibit declining production and increasing steam-to-oil ratio (SOR). Suncor piloted Non-Condensable Gas co-injection (NCG) to divert steam from aging wells to newer wells with lower SOR. Methane is co-injected with steam to reduce the SOR while maintaining production and pressure.

This technique reduces environmental impact by optimizing steam demand at our facilities while reducing energy intensity and CO<sub>2</sub> emissions.

The pilot projects at Firebag and MacKay River have shown encouraging results, prompting larger technology demonstrations at both fields. The expanded demonstrations at MacKay River and Firebag are currently in operation.

Suncor is also examining the use of NCG co-injection early in the SAGD life to improve recovery in certain types of reservoir.

## WELLBORE ENHANCEMENTS

Improving the reliability of SAGD assets creates opportunities to be more efficient with oil recovery while using less energy and water.

Suncor is advancing a portfolio of wellbore enhancement technologies that aim to reduce costs, improve safety and reduce the GHG footprint of our SAGD operations through improved wellbore reliability and efficiency.

These technologies are typically field tested at existing SAGD operations but are readily adaptable to our growth projects irrespective of whether steam or solvent recovery process are employed.

Suncor expects that most of the current wellbore enhancement technologies will be ready for commercial deployment in a one to four-year time span. The current focus includes:

- electric submersible pump (ESP) reliability
- flow control devices (FCDs)
- wellbore heating
- well integrity

### Electric submersible pump (ESP) reliability

ESPs are used extensively in Suncor SAGD operations. Improving the lifespan of the pumps greatly improves maintenance and reliability costs, avoids lost production and reduces GHG emissions. We are focused on improving the ESP reliability through joint industry collaboration and are on schedule to pilot two wells in late 2019.

### Flow control devices

Controlling where steam is allocated to the reservoir allows us to improve steam distribution along the well. This improves steam efficiency and well reliability by preventing catastrophic steam breakthroughs.

Flow control devices (FCDs) are designed to provide the ability to control the steam allocation and drive improved conformance. Suncor is focused on enhanced designs that improve FCD reliability and functionality and we have been successful in developing the Suncor M-Tool to further improve the efficiency and reliability of the devices, as well as reduce costs through design simplification.

The M-Tool is currently being piloted at Firebag, with encouraging preliminary results. We are also working with industry partners to allow this improved design to be tested and deployed across the in situ space.

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# MINING TECHNOLOGIES

## DECARBONIZATION

Suncor is committed to 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.

### What does decarbonization mean?

Bitumen is a complex mixture of compounds, including heavy hydrocarbon components that require significant upgrading and refining before they can be used as gasoline, diesel, or other fuels. Upgrading refers to processes that increase the ratio of hydrogen to carbon in these heavy components; one way to achieve this is by rejecting a portion of the carbon from the bitumen. This 'decarbonization' could result in:

- higher value bitumen-derived crude oil while simultaneously permanently removing carbon, sulphur and impurities from the global fuel system
- less diluent required for transportation and decreases the downstream processing hydrogen and energy requirements resulting in lower greenhouse gas emissions
- increased pipeline capacity

Decarbonization is a strategic focus area for technology development in Suncor – reliable, less energy-intensive processes will be needed to realize the benefits. An example of this is our Paraffinic Froth Treatment process we have deployed at our Fort Hills mine. The result could be a higher value crude oil delivered at a lower cost and with a lower environmental impact from wells to wheels.

## NON-AQUEOUS EXTRACTION

Through partnerships with equipment suppliers and research organizations, such as [Innotech Alberta](#) (a subsidiary of Alberta Innovates), we are pursuing new technologies in surface mining and bitumen extraction. These could reduce the need for water in bitumen extraction, thereby reducing tailings, simplifying mining and the reducing overall cost of our operations.

Currently, we use warm water to separate bitumen from the sands. If we could replace it with an alternative solvent, we could significantly reduce water usage, the need for tailings ponds, and potentially, our greenhouse gas footprint by reducing operating temperatures and simplifying our overall process.

We are currently undertaking various lab and pilot scale testing using solvents to prove we can extract bitumen effectively without water, and produce a dry mixture of sand and clays from this process that could be returned to the mine for reclamation.

This work includes evaluating many process options to develop an optimal design for a demonstration pilot tentatively planned for 2020.

## FROTH TREATMENT TAILINGS

### Froth treatment tailings management

Bitumen production from mineable oil sands consists of a number of process steps that increasingly improve the purity of the bitumen stream. One of these steps – called 'froth treatment' – uses a light hydrocarbon to help remove most of the remaining water and minerals from the bitumen froth generated in the primary extraction circuit. This step makes the resulting 'diluted bitumen' suitable for upgrading.

The removed water and minerals become part of a tailings stream known as froth treatment tailings (FTT). The FTT consists of water, sand, various minerals and residual hydrocarbons. The mineral phase consists of various compounds, which include regular sand, a variety of rare earth elements (REEs), and other minerals. The hydrocarbons are present in the form of bitumen and trace light hydrocarbon.

Safe and effective management of this FTT stream – both short and long-term – requires that any potential revenue value of the FTT stream is protected. At the same time we need to ensure that the material is stored in a way that is compatible with long term closure outcomes.

Through [COSIA](#), Suncor is actively involved in various programs to measure the environmental impact of FTT, and to develop strategies for safely storing the material. These programs are an example of successful industrial collaboration on environmental performance improvement.

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Suncor is further developing ways to use the natural bio-activity observed in the tailings containment areas to mitigate the impact of the FTT constituents. Several process options are also being evaluated to recover FTT constituents that could cause long-term geochemical effects prior to placement of the material in the final closure landscape.

In parallel with the activities around long-term closure for FTT related materials, Suncor continues to evaluate methodologies to unlock the economic potential of the valuable minerals in these streams. Many daily-use items like rechargeable batteries and magnets; require elements that are naturally enriched in the FTT stream. If processes could be developed to recover these elements cost-effectively, then this could shift the thinking on FTT from it being a waste stream to it being a potential resource for several decades.

## PARAFFINIC FROTH TREATMENT (PFT)

Our Fort Hills mine uses a paraffinic froth treatment (PFT) to convert bitumen froth generated in the extraction circuit into an upgrader feedstock. In PFT, we selectively remove part of the asphaltenes (the low-value, heavy fraction of the mined bitumen) to create a lighter, higher-quality bitumen that requires less diluent to transport by pipeline and no upgrading requirements, leaving us more flexibility for downstream processing.

*As a result of this partial decarbonization process, our greenhouse gas emissions for the average barrel extracted at Fort Hills are on par with the average crude refined in the United States.*

## AUTONOMOUS HAULAGE SYSTEMS (AHS)

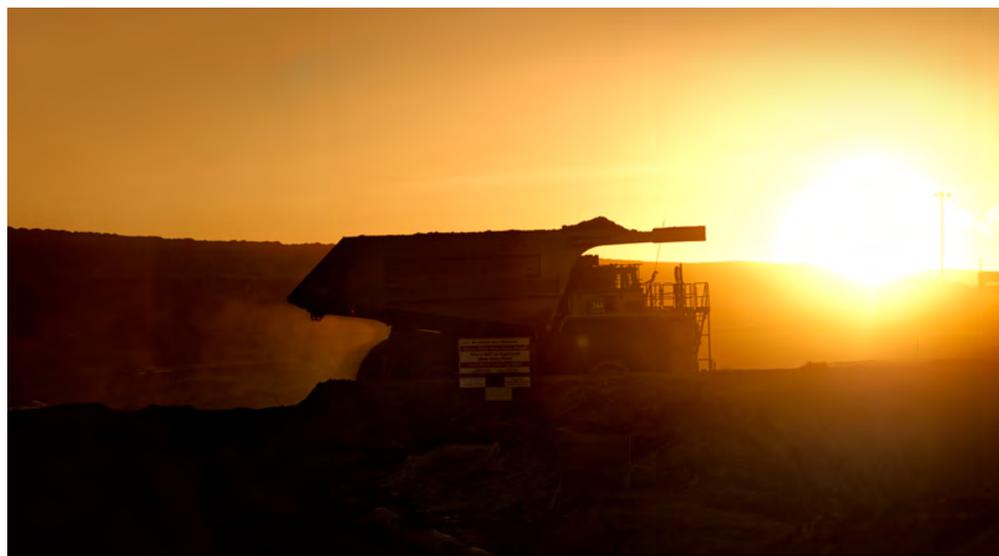
In early 2018, we announced we are proceeding with the phased implementation of autonomous haulage systems (AHS) at company-operated mines. We now have AHS-enabled trucks running at the North Steepbank site and AHS implementation began at the Fort Hills site in 2019, ramping up through 2020. Over the next five years, we expect to deploy more than 150 autonomous haul trucks in the full program, which will be one of the largest investments in autonomous vehicles in the world.

Autonomous haul trucks operate using GPS, wireless communication and perceptive technologies. The trucks operate predictably and employ a suite of safety features like prescribed route mapping and obstacle detection systems. They also reduce interaction between people and equipment which decreases incident rates and injury potential. Trucks used to support Suncor's operations are designed to operate in either an autonomous or manual mode.

While Suncor is the first company in Canada to deploy the equipment, this technology is used commercially in mining environments across Australia, the United States and Chile.

Evaluations have shown the technology offers many advantages over existing truck and shovel operations, including enhanced safety performance, better operating efficiency and lower operating costs.

The implementation of AHS will change roles and required skill sets for some employees at Suncor's operations over time. A staged approach to deployment will allow the company to deliberately focus on each mining area and apply lessons from one to the next.



Haul truck at Millennium Mine.

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# RECLAMATION TECHNOLOGIES

We're aggressively working to accelerate the pace of progressive reclamation of disturbed land at our mining and in situ locations.

## INNOVATION IN LAND RECLAMATION

### Nikanotee fen

Now more than six years after completing the Nikanotee (pronounced Nee-ga-no-tee; Cree word for "future") fen, the ongoing research and monitoring are showing that the fen continues to progress. The fen (a form of wetland area that is a highly productive and diverse ecosystem) is remaining wet through the seasonal weather cycles, water quality is good and plants are growing and spreading naturally.

Suncor was one of the first companies in the world to complete reconstruction of this type of wetland. This work was completed in co-operation with a number of university researchers and consultants from across the continent.

Located at our Oil Sands base plant near Fort McMurray, Alberta, our three-hectare fen is fed by a man-made 32-hectare watershed. The project is the culmination of more than 10 years of collaborative research.

The University of Waterloo led the fen hydrological feasibility modelling, in partnership with the Cumulative Environmental Management Association (CEMA). Suncor funded the design and construction of the fen. Along with Teck Resources and Imperial, we are funding ongoing research and monitoring of the constructed site.

The Nikanotee fen is now a joint industry project, contributed by Suncor to other members of [COSIA](#).

### PASS

Built upon the processes currently used in our TRO™, Suncor has developed permanent aquatic storage structure (PASS), a fluid tailings treatment process to significantly increase the amount of fluid tailings we can treat in a more sustainable manner.

PASS combines the TRO™ process with the addition of a coagulant to improve the quality of the water expressed from the treated fluid tailings. The treatment process allows us to rapidly dewater the fluid tailings as the clay particles adhere to the flocculant, safely expressing most of the trapped water and providing an effective means for creating a lake that achieves our closure plan, and do so in an accelerated timeline.

To validate this closure concept, we have constructed a [demonstration pit lake, now called Lake Miwasin](#) that contains PASS-treated fluid tailings and has an aquatic cover established in 2018. The project is planned to be monitored and adaptively managed for the next 15 years.

### Lake Miwasin

Now known as Lake Miwasin, Suncor's demonstration pit lake (DPL) is part of our aquatic closure technology development program designed to ensure we can successfully reclaim mine sites. The DPL project incorporated the PASS fluid tailings treatment process to accelerate the process to establish a lake capable of supporting a full ecosystem of aquatic life. An aquatic cover has been established on the treated tailings and operated in the same way we have planned for the full-scale closure drainage system.

Pit lakes are a necessary part of successful closure and reclamation plans and are considered a best practice in mining industries around the world. There are a number of pit lakes in Alberta created from former coal mine pits and are now used for recreational fishing and swimming. They continue to demonstrate naturally colonized fish and staging areas for migratory birds.

Throughout the Lake Miwasin project, engagement with Indigenous communities is a major focus for us. We are working to collaborate with communities on the research and monitoring program so we can learn from each other. Before construction work began, we invited Elders from a neighbouring community to perform a blessing on the land of the demonstration lake.

In August 2018, Indigenous Elders and Suncor's Indigenous co-op and summer students participated in planting vegetation around the lakeshore. The planting list included culturally-significant wetland plants, such as ratroot, sweetgrass and sweet gale, Indigenous elders and knowledge holders recommended these plants through the Suncor-sponsored Culturally Significant Wetland Plants Study.

In May 2019, members of the First Nations and Métis community member were invited for the Lake Miwasin/Constructed Wetland Treatment System workshop. The workshop provided an opportunity for additional community input on the proposed research and monitoring projects for the community-led monitoring (CLM) program for the Lake Miwasin project.

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# UPGRADING AND REFINING TECHNOLOGIES

Suncor's upgrading and refining operations provide an important link between our Canadian resource base and the energy market.

Suncor processes 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 TECHNOLOGY

Suncor currently uses two upgrading processes:

- **coking/thermal cracking:** which heats bitumen to the point where it cracks into a vapour stream and a byproduct called 'coke'
- **hydrotreating:** where hydrogen is added to remove sulphur and blended for shipments to refineries

Both processes require significant energy.

*Reducing the temperature and pressure in our processes could decrease emissions at production and refining.*

We are advancing technology development in low-temperature thermal cracking to examine the potential for bitumen to be partially upgraded to a transportable and marketable product. This would increase value by decreasing the amount of diluent required to transport this new bitumen product, and lower GHG intensity from extraction to the end-user. This would also avoid the need for a complex upgrader.

We are also evaluating the integration of a de-asphalting step as a form of decarbonization, to reject asphaltenes to make an even lighter and more valuable crude product for the market.

This opportunity would be a variation of the [paraffinic froth treatment](#) process used at our Fort Hills site, in which a more valuable crude oil is made for refining, with reduced GHG intensity.

## WASTEWATER TREATMENT FACILITY AT COMMERCE CITY

Many industrial processes use water and petroleum refining is no different. Our Commerce City refinery uses both city water and collected groundwater for steam production and cooling, as well as to wash out the natural contaminants in crude oil, like salts and minerals, to prevent corrosion in our processing units.

Much of this water is recycled for reuse at our facility, and the remaining portion is treated and discharged to a local waterway, Sand Creek, under a permit issued by the Colorado Department of Public Health and Environment.

In 2017, the Commerce City refinery implemented a \$65 million upgrade to our existing wastewater treatment facility, leveraging a technology called membrane ultrafiltration to treat and filter the water. The facility is one of the first in North America to use this technology in treating refinery wastewater streams.

"Membrane ultrafiltration removes particles from wastewater down to approximately 0.08 microns in size," explains April Maestas, director of engineering, Downstream, at Suncor. "That's about 1,000 times smaller than the diameter of a human hair."

Ongoing and future construction phases of the wastewater treatment facility will enable us to strive to continuously improve our environmental performance on wastewater treatment and discharge.



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# RENEWABLE TECHNOLOGIES

We take a holistic view at low-carbon innovation.

## ELECTRIC VEHICLE CHARGING NETWORK

Suncor, through its Petro-Canada brand, is building a network of electric vehicle (EV) fast charging stations across the country.

Petro-Canada stations will offer DC fast chargers which support a broad selection of vehicles. The chargers can provide up to a 200 kilowatt charge – enough to provide an 80% charge to most EVs in less than 30 minutes. The units are capable of 350 kilowatt charging with future upgrades.

More than 50 EV stations will be located along the Trans-Canada highway at strategically located Petro-Canada stations from Nova Scotia to British Columbia. Construction began in 2019 with sites opening over 2020.

A test site is currently operational in Milton, Ontario.

“When we first launched, we initially had four to five customers a day, but those numbers have quickly begun to multiply. I am eager to learn more about electric vehicles and charging because I believe this will be a part of Canada’s mobility future,” says Milton Petro-Canada gas station operator, Mathi Valautham.



*Petro-Canada electric vehicle charging station in Milton, Ontario.*

## BIOFUELS

We take a holistic view at low-carbon innovation and also have a focus on GHG reduction in our downstream business. Since 2006, Suncor has been making a significant impact in Canada’s emerging biofuels industry and we continue to work to reduce emissions intensity of liquid fuels. Our downstream carbon reduction initiatives include alternative fuels, fuel switching, energy efficiency and investing in new technologies.

Some of these initiatives include:

- Investments in companies focused on biofuel technologies such as [LanzaTech](#).

- In 2019, we invested in [Enerkem Inc.](#), 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.
- We own and operate the largest ethanol plant in Canada which provides the ethanol we blend in our gasoline. We are evaluating optimization work at our St. Clair ethanol plant to increase the quality of our products to develop lower carbon intensity ethanol.
- Increasing biocontent to our diesel and gasoline through hydrotreated renewable diesel (HRD), fatty acid methyl ester (FAME) and ethanol; all forms of renewable fuels.

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# DIGITALIZATION

Suncor continues to implement new digital technologies across the enterprise. Today, we're increasingly harnessing digital technology capabilities to help improve the safety, productivity, reliability and environmental performance of our operations.

A more digital environment means higher-quality and faster decisions, and increased transparency, collaboration and efficiency.

## RELIABILITY AND PROCESS SAFETY

### Advanced analytics

Suncor is implementing advanced analytics to improve personal and process safety, asset reliability, operations optimization and environmental performance.

Representing a broad range of solutions, advanced analytics allows for sophisticated data mining that produces deeper insights into patterns and trends across our assets and workforce.

An example of this work is the application of analytics of process hazards analyses to support the focus on quality and prioritization of improvement opportunities. As a result, we can make faster, more proactive decisions and system changes that can prevent incidents. We expect this increased ability to make evidence-based predictions should improve reliability, reduce maintenance costs and optimize facility throughput.



We have used drones to support several operational areas in conducting visual inspections and surveys within operating plants and executing new projects.

*“With the rapid advances in drones and remote sensing technologies, we’ll continue to see an increasing number of useful applications for diverse areas of our business.”*

– Mike Teshima, director, digital innovation and development

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Upgrading operator pictured with the wireless badge and personal gas detector, part of Suncor's Safety and Productivity Solution.

### Connecting frontline staff

We are connecting frontline staff to digital solutions – enabling maintenance and operations workers to create, and have access information in the field. These initiatives will enhance safety and productivity by facilitating better and immediate data-based decisions that improve our operations.

An example of this is the use of operation performance management (OPM) dashboards at our Firebag facility. Until the introduction of OPM, most energy intensity updates for day-to-day decision-makers were only available on quarterly scorecards, and field supervisors did not have access to real-time performance in the field.

With the new OPM dashboards, field supervisors are able to review performance indicators and calculations, understand performance gaps, and help the supervisors make real-time decisions to improve energy intensity performance. The results from process changes are seen instantly and easily measured and reported, resulting in cost and emissions improvements.

## IMPROVING SAFETY

### Remote sensing technologies

Opportunities to reduce safety risks are always a priority, and remote sensing technologies provide solutions that are quick, safe and cost-efficient.

- **Drones** are used in our operations to assist with equipment inspection, maintenance and turnaround planning, and earthworks surveying. Their use has resulted in reduction of safety risks by decreasing worker exposure to hazardous tasks, e.g. survey crews working in remote areas, and the improvement of operations and project outcomes.
- **Wireless employee monitors** allow us to remove obstacles that may inhibit an employee's work and empowers us to provide faster emergency response. The devices are equipped with sophisticated gas detection monitors, which can detect hazardous levels of certain gases or solvent vapours. This allows us to identify dangerous conditions and move employees out of those areas to secure locations. The monitors are also equipped with a man down and panic button that can be used in an emergency.

Wireless employee monitors have been implemented at three sites, and the data is used to perform analytics for lower-level safety exposures and to help us identify plant integrity issues – enabling us to respond to issues, both in real time and proactively.

Implementation at three additional downstream assets is planned for 2020, and we are evaluating other uses for the devices. These include internal inspection of confined space, fugitive emission monitoring and leak detection.

## STREAMLINING PROCESSES WITH ROBOTIC PROCESS AUTOMATION

We continue to explore more opportunities using robotic process automation (RPA).

To date, we have employed RPA for high-volume, rule-based and routine work. We currently have 19 bots operating across the company in Finance, Human Resources, Supply Chain and Field Logistics, Environment Health & Safety, and Maintenance and Reliability, with several more bots in development.

These new automation solutions are helping streamline our business processes, making it easier for our employees to get their jobs done so they can focus on higher-value work.

We see intelligent business process automation as a key digital enabler to deliver high-value business transformation.

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# COLLABORATION

We all have a role to play in creating our energy future. Moving forward requires deep conversations – with stakeholders, governments, community members and industry partners, among others. And while we might not always agree on everything, the conversations help us understand what we have in common – a desire for energy to improve quality of life, a healthy environment and vibrant communities.

## COMMUNITY PARTNERSHIPS

Through the [Suncor Energy Foundation](#) we work deeply with partners and communities to provide investments that create value for society, and for our business, by addressing community issues of mutual interest in a way that seeks solutions and benefits everyone. Our vision is to create a better world with the communities in which Suncor operates, and with those who are courageously seeking solutions and making a positive difference in society.

Examples of these collaborations include:

- the [Energy Futures Lab](#), a multi-sector collaboration designed to help shape the energy future and strengthen Alberta and Canada's position as a global energy leader
- working with [a number of organizations](#) to support reconciliation through leadership development, building community development capacity and taking a systems approach
- bringing social innovators, funding partners, thought leaders, government and community representatives, and Indigenous youth together for events like [The Gathering](#), which provide a forum to explore complex community needs that require collaboration to make progress and see lasting change

## PARTNERSHIPS WITH ENVIRONMENTAL NON-GOVERNMENTAL ORGANIZATIONS (ENGOs)

We engage with a wide variety of groups and individuals to seek input. Some of the relationships we form are with those who are openly critical of oil sands development. We have these conversations because we think it's important to listen and understand other perspectives and share knowledge and insights. We find value in thinking about things differently and this often leads to new ideas, joint problem-solving or different ways of working with our stakeholders.

### Environment of mutual respect

We seek to engage with ENGOs in an atmosphere of mutual respect, although this does not mean either side is co-opted by the other. Our ENGO partners are free to publicly criticize our company or industry as they see fit except on specific initiatives in which we've agreed to co-operate. We, in turn, are free to counter statements and research by ENGO partners if we know it to be contrary to established facts. Simply put, both sides can agree to disagree, while continuing to work together for the greater good.

We have entered into several successful partnerships with ENGOs in recent years. These organizations include:

### Ceres

Ceres mobilizes a network of investors, companies and public interest groups to accelerate and expand adoption of sustainable business practices and solutions to build a healthy global economy. Suncor has been a Ceres member company since 2007. We have worked closely with a diverse stakeholder group assembled by Ceres to discuss our overall sustainability strategy, including reporting, risk analysis and issues management. This Ceres stakeholder panel encouraged us to develop our first set of environmental performance goals.

- In 2015, Ceres reviewed our draft [sustainability goals](#) and provided feedback.
- In 2017, Ceres reviewed and provided feedback for Suncor's 2017 Climate Report: Resilience Through Strategy.
- In 2018, Suncor hosted a Ceres-facilitated stakeholder panel to review our sustainability progress. The stakeholders were asked to provide us with critical feedback on our approach and progress toward our sustainability goals including our GHG goal. We also asked them for ideas to improve Suncor's disclosure in line with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations.

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### Boreal Leadership Council (BLC)

[Boreal Leadership Council](#) (BLC) is composed of leading conservation groups, First Nations, resource companies and financial institutions, all of which have a stake in the future of Canada's boreal forest. As a member of the BLC, we are a signatory to the Boreal Forest Conservation Framework. We are committed to implementing this national vision through our own sphere of activity and have submitted an action plan to council members outlining our priorities and focus areas.

Suncor sponsored a BLC project to look at how Indigenous Peoples are working to [protect the woodland caribou](#). The review looked at tools, data, practices and governance structures used by Indigenous Peoples, including:

- Indigenous knowledge
- habitat identification
- populations monitoring
- other aspects of caribou conservation

Suncor also participated in a working group looking at understanding and implementing free, prior and informed consent (FPIC) in Canada. We continue to work closely with the BLC on this important issue.

## ENVIRONMENTAL MULTI-STAKEHOLDER WORKING GROUPS

We believe working with stakeholders to understand their environmental concerns is the best way to develop programs to monitor the environment and to develop a better understanding of environmental limits. We are a member of:

### Wood Buffalo Environmental Association (WBEA)

The [Wood Buffalo Environmental Association](#) is a collaboration of communities, environmental groups, industry, governments and Indigenous representatives that has developed and implemented an integrated and intensive program on air and terrestrial monitoring in the region. Through the Environmental Science and Monitoring Division of Alberta Environment and Parks, the WBEA monitors air quality in the Regional Municipality of Wood Buffalo, 24 hours a day, 365 days a year, and shares the information collected with stakeholders and the public.

### Alberta Association of Conservation Offsets (AACO)

Suncor is a member of the [Alberta Association of Conservation Offsets](#) which is a non-governmental collaboration among a number of diverse entities and interests sharing an interest or expertise in the field of conservation and biodiversity. This group is working on a provincial offsetting policy.

### Athabasca Watershed Council (AWC)

The [Athabasca Watershed Council](#) is a multi-stakeholder, not-for-profit watershed planning and advisory council (WPAC) that was formed in August 2009. To provide timely credible information about the Athabasca Watershed, the council works with:

- academia
- industry
- environmental and stewardship groups
- various levels of government
- communities and citizens

The AWC-WPAC actively promotes, fosters respect, and plans for an ecologically healthy watershed by building relationships, sharing information, and informing planning and policy decisions that affect the Athabasca River watershed.

## INDUSTRY COLLABORATIONS

We also participate in industry organizations that work to improve the industry's environmental, social and economic performance. These organizations include:

### Canada's Oil Sands Innovation Alliance (COSIA)

[COSIA](#) is an alliance of oil sands producers focused on accelerating the pace of improvement in environmental performance in Canada's oil sands through collaborative action and innovation. Through COSIA, participating companies capture, develop and share innovative approaches and best thinking to improve environmental performance in the oil sands. COSIA represents 90% of oil sands production in Canada, focusing on five environmental priority areas:

- tailings
- water
- land
- greenhouse gases
- monitoring

COSIA is accelerating innovation and environmental performance through a continued focus on collaboration and transparent exchange.

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### Clean Resource Innovation Network (CRIN)

The [Clean Resource Innovation Network](#) is a group of forward-thinking oil and gas industry professionals, innovators, financiers, policy-makers, incubators and accelerators, academics and students committed to the success of the hydrocarbon energy sector, the people and communities it touches, and a strong, carbon-competitive and diversified Canadian economy.

### Oil Sands Community Alliance (OSCA)

Building on the work of the predecessor Oil Sands Developers Group, the [Oil Sands Community Alliance](#) aims to help communities in the oil sands region thrive economically and socially. OSCA's collaborative approach facilitates engagement, builds relationships and creates measurable socio-economic benefits in the focus areas of Indigenous communities, community well-being, infrastructure and workforce planning.

### INDUSTRY ASSOCIATIONS

We are a member of several industry associations. There is strength in having forums for creating alignment and discussing issues. For a list of certain industry associations, please refer to [Lobbying and Disclosure](#).

### ADVOCACY COALITIONS

We value and advocate reaching out to diverse stakeholders to generate constructive dialogue about energy development. Since 2013, we have continued to work with [Resource Works](#), a multi-stakeholder coalition to encourage broad dialogue on energy and resource development in Canada. Through this partnership, we hope to encourage Canadians from coast-to-coast to learn more about the value that our national resource sector brings to their daily lives and the Canadian economy.

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## SOCIAL INNOVATION

In addition to technology and digital innovations, Suncor also engages in social innovation. Social innovation considers the whole system to address business and community needs. Systems thinking is especially useful to address complex challenges that cannot be successfully addressed solely by one organization or sector.

“The world, including the environment that Suncor is operating in, is increasingly complex and dynamic,” says Eric Axford, Suncor’s EVP and chief sustainability officer. “More than ever, it requires a holistic approach. There are lots of definitions of social innovation. In our view, social innovation helps us to see our place in a system, contribute Suncor’s unique assets and strengths, and work with others to make lasting progress on societal and community needs that impact all of us.”

The development and progression of Suncor’s [social goal](#) has required deep commitment and work with communities, as well as among teams across Suncor. It is changing how we think and act as a company, and is one example of a successful social innovation in action, one that is creating broad and lasting culture change.

Other examples include the [Energy Futures Lab](#), which the Suncor Energy Foundation and Suncor have supported since 2015, and new business partnerships and models like the [East Tank Farm Development agreement](#) and [Petro-Nor](#).

The opportunity to learn and incorporate social innovation thinking into our business provides the chance to mitigate future risks, identify new areas of opportunity and ways of operating, and contribute to society and the communities we’re a part of.

“The size and type of 21st century challenges can often feel overwhelming, but they also give us opportunities to work together – and work differently – to adapt and change our business and, working with others, create and sustain a more positive future,” says Eric.



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## PERFORMANCE DATA

Our sustainability performance data provides annual (January 1 to December 31) operational, environmental, economic, health and safety, and workforce data for 2018, with five-year performance trends where possible. Business segment or facility level information is also provided, where possible. Environmental performance indicators reflect assets operated by Suncor only, unless otherwise stated. Economic metrics are reported in a manner consistent with our 2018 Annual Report.

Footnotes provide additional information for specific boundary conditions, changes in methodology, restatements, and definitions, where applicable.

Any data point that is accompanied by the (A) symbol has been independently reviewed and assured by Ernst & Young LLP. This can be downloaded from our Report on Sustainability website on the Performance Data Page.



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Any data point that is accompanied by the (A) symbol has been independently reviewed and assured by Ernst & Young LLP. This can be downloaded from our Report on Sustainability website on the Performance Data Page.

- Ernst & Young LLP Independent Assurance Statement in [Appendix B](#)
- [All performance data](#)

Indicators – Suncor company totals*	GRI Standards	2014	2015	2016	2017	2018
<b>Operational performance (note 4)</b>						
<b>Total upstream and downstream production</b> million m <sup>3</sup> /yr	OG1	45.38	48.24	44.71	48.53	<b>53.95 (A)</b>
<b>Upstream processed volumes and net production</b> million BOE/yr	OG1	162.03	171.63	152.40	171.21	<b>215.07 (A)</b>
<b>Upstream processed volumes and net production</b> million m <sup>3</sup> OE/yr	OG1	25.75	27.29	24.23	27.22	<b>34.19 (A)</b>
<b>Downstream net production</b> million m <sup>3</sup> refined product/yr	OG1	27.16	27.62	27.23	27.98	<b>26.92 (A)</b>
<b>Ethanol production</b> million litres of ethanol product/yr	OG1	412.45	417.91	414.39	407.80	<b>402.00</b>
<b>Wind energy generated</b> MWh	OG3	320,720	313,283	106,912	76,589	<b>100,850</b>
<b>Ethanol blended into gasoline</b> million litres	–	1,000	1,027	1,135	1,117	<b>1,129</b>
<b>Sulphur content of gasoline</b> ppm	–	18.70	15.70	15.30	16.20	<b>18.60</b>
<b>Greenhouse gas (GHG) and energy (note 5, note 6)</b>						
<b>GHG (Scope 1 and 2) emissions</b> thousand tonnes CO <sub>2</sub> e	305-1 305-2	20,468	20,480	18,739	19,874	<b>21,990 (A)</b>
GHG (Scope 1) emissions thousand tonnes CO <sub>2</sub> e	305-1	–	–	–	–	<b>20,577</b>
GHG (Scope 2) emissions thousand tonnes CO <sub>2</sub> e	305-2	–	–	–	–	<b>1,413</b>
<b>GHG emissions intensity</b> tonnes CO <sub>2</sub> e/m <sup>3</sup> OE	305-4	0.43	0.41	0.40	0.40	<b>0.39 (A)</b>
<b>GHG (Scope 3) emissions</b> thousand tonnes CO <sub>2</sub> e	305-3	1,466	1,549	1,623	1,881	<b>1,525</b>
<b>Energy use</b> million GJ	302-1 302-2	304.3	310.4	285.8	302.0	<b>336.1</b>

\* Please refer to the corresponding notes in Appendix A for additional notes about the performance data.

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Indicators – Suncor company totals*	GRI Standards	2014	2015	2016	2017	2018
Direct energy use million GJ	302-1	296.0	301.0	276.0	287.9	<b>328.3</b>
Indirect energy use million GJ	302-2	8.24	9.78	10.02	14.08	<b>7.78</b>
<b>Energy intensity</b> GJ/m <sup>3</sup>	302-3	6.70	6.44	6.39	6.22	<b>6.23</b>
<b>Air emissions (note 7)</b>						
<b>Total emissions</b> thousand tonnes	305-7	68.40	67.40	65.50	70.29	<b>79.54</b>
<b>Total emissions intensity</b> kilograms/m <sup>3</sup>	305-7	1.51	1.40	1.46	1.45	<b>1.47</b>
<b>SO<sub>2</sub> emissions</b> thousand tonnes	305-7	23.10	18.40	21.10	20.51	<b>20.50</b>
<b>SO<sub>2</sub> emissions intensity</b> kilograms/m <sup>3</sup>	305-7	0.51	0.38	0.47	0.42	<b>0.38</b>
<b>NO<sub>x</sub> emissions</b> thousand tonnes	305-7	27.80	27.90	24.90	26.64	<b>31.81</b>
<b>NO<sub>x</sub> emissions intensity</b> kilograms/m <sup>3</sup>	305-7	0.61	0.58	0.56	0.55	<b>0.59</b>
<b>VOC emissions</b> thousand tonnes	305-7	17.50	21.10	19.50	23.14	<b>27.23</b>
<b>VOC emissions intensity</b> kilograms/m <sup>3</sup>	305-7	0.38	0.44	0.44	0.50	<b>0.50</b>
<b>Water use (note 8)</b>						
<b>Water withdrawal</b> million m <sup>3</sup>	303-1	149.27	142.47	162.18	105.07	<b>144.69 (A)</b>
Surface water withdrawal million m <sup>3</sup>	303-1	116.36	118.92	124.78	74.90	<b>106.88</b>
Groundwater withdrawal million m <sup>3</sup>	303-1	2.10	2.72	2.51	2.26	<b>3.13</b>
Municipality/city/district water withdrawal million m <sup>3</sup>	303-1	3.49	4.27	4.22	4.20	<b>4.12</b>
Treated wastewater withdrawal million m <sup>3</sup>	303-1	1.29	1.51	1.37	1.60	<b>1.52</b>
Industrial run-off water withdrawal million m <sup>3</sup>	303-1	26.03	15.05	29.30	22.10	<b>29.04</b>
<b>Water withdrawal intensity</b> m <sup>3</sup> /m <sup>3</sup>	303-1	3.29	2.95	3.63	2.16	<b>2.68 (A)</b>
<b>Water returned</b> million m <sup>3</sup>	306-1	101.22	97.46	105.12	65.99	<b>77.44</b>
<b>Water consumption</b> million m <sup>3</sup>	–	49.14	45.33	57.19	39.07	<b>67.24</b>
<b>Water consumption intensity</b> m <sup>3</sup> /m <sup>3</sup>	–	1.08	0.94	1.28	0.81	<b>1.25</b>

\* Please refer to the corresponding notes in Appendix A for additional notes about the performance data.

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Indicators – Suncor company totals*	GRI Standards	2014	2015	2016	2017	2018
<b>Fresh water consumption</b> million m <sup>3</sup>	–	30.80	35.90	36.80	22.40	<b>46.52</b>
<b>Fresh water consumption intensity</b> m <sup>3</sup> /m <sup>3</sup>	–	0.68	0.74	0.82	0.46	<b>0.86</b>
<b>Land disturbance and reclamation (note 10)</b>						
<b>Total land approved for development</b> cumulative hectares	304-1	46,995	47,085	48,734	48,734	<b>66,905</b>
<b>Total land disturbed</b> cumulative hectares	304-2	23,704	23,757	23,613	23,960	<b>33,772</b>
<b>Total land reclaimed</b> cumulative hectares	304-3	1,920	2,154	2,140	2,239	<b>2,621</b>
<b>Waste (note 9)</b>						
<b>Total waste generated</b> thousand tonnes	306-1	2,513	2,391	2,148	2,123	<b>2,487</b>
<b>Hazardous waste generated</b> thousand tonnes	306-2	2,299	1,992	1,982	999	<b>983</b>
Hazardous waste incinerated thousand tonnes	306-2	3.11	2.38	3.60	3.54	<b>4.14</b>
Hazardous waste deep well injection thousand tonnes	306-2	2,185	1,980	1,963	985	<b>958</b>
Hazardous waste landfilled thousand tonnes	306-2	1.80	5.70	12.01	7.25	<b>6.16</b>
Hazardous waste otherwise disposed or treated thousand tonnes	306-2	109.28	4.09	3.15	3.27	<b>15.04</b>
<b>Non-hazardous waste generated</b> thousand tonnes	306-2	214	399	167	1,124	<b>1,503</b>
Non-hazardous waste incinerated thousand tonnes	306-2	1.13	1.56	0.69	0.09	<b>0.17</b>
Non-hazardous waste deep well injection thousand tonnes	306-2	1.21	0.80	0.87	986.85	<b>1,315</b>
Non-hazardous waste landfilled thousand tonnes	306-2	197	383	161	135	<b>179</b>
Non-hazardous waste otherwise disposed or treated thousand tonnes	306-2	14.22	13.92	4.27	1.62	<b>9.71</b>
<b>Waste recycled, reused or recovered</b> thousand tonnes	306-2	88.72	135.00	123.00	71.00	<b>96.18</b>
<b>Environmental compliance (note 11)</b>						
<b>Environmental non-compliance</b> #	307-1	–	–	5	4	<b>7</b>
<b>Environmental regulatory fines</b> thousand CND\$	307-1	–	–	275	413	<b>282</b>
<b>Significant spills</b> #	306-3	–	–	0	0	<b>0</b>

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<b>Revenues and other income</b> \$ millions	201-1	40,490	29,680	26,968	32,079	<b>38,986</b>
<b>Operating, selling and general expense (OS&amp;G)</b> \$ millions	201-1	9,541	8,607	9,150	9,245	<b>10,573</b>
Employee costs \$ billions	201-1	3.40	3.30	3.40	3.20	<b>3.30</b>
<b>Royalties and taxes paid</b> \$ millions	201-1	5,259	1,805	105	1,489	<b>1,695</b>
<b>Community investments</b> \$ thousands	201-1	27,246	26,346	33,800	26,557	<b>28,980</b>
<b>Distribution to shareholders</b> \$ millions	201-1	2,267	2,565	2,889	3,069	<b>3,230</b>
<b>Economic value retained</b> \$ millions	201-1	23,396	16,677	14,789	18,249	<b>23,488</b>
<b>Enterprise value</b> \$ billions	102-7	66	67	89	89	<b>76</b>
<b>Capital and exploration expenditures</b> \$ millions	201-1	6,961	6,667	6,582	6,551	<b>5,406</b>
<b>Political donations</b> \$ thousands	201-1 415-1	96	15	3	0	<b>0</b>
<b>Purchases of goods and services</b> \$ millions	–	11,951	12,797	11,905	11,636	<b>10,622</b>
Canada \$ millions	–	10,915	11,178	10,632	10,842	<b>9,917</b>
Local businesses and suppliers \$ millions	204-1	4,920	4,504	3,732	3,615	<b>4,257</b>
<b>Indigenous supplier-spend</b> \$ millions	204-1	463	599	445	521	<b>703</b>
<b>Community investments (note 15)</b>						
<b>Total contributions to charitable, non-charitable and community groups</b> \$ thousands	201-1	27,246	26,346	33,800	26,557	<b>28,980</b>
Value of cash donations \$ thousands	201-1	23,745	24,425	22,843	25,466	<b>27,843</b>
Value of time donations \$ thousands	201-1	798	408	83	800	<b>161</b>
Value of in-kind donations \$ thousands	201-1	214	382	10,873	291	<b>1,137</b>
Value of management cost donations \$ thousands	201-1	1,384	988	953	994	<b>1,143</b>
Value of external resources leveraged \$ thousands	201-1	1,105	143	744	232	<b>945</b>
<b>Suncor's donation to the Suncor Energy Foundation (SEF)</b> \$ thousands	201-1	19,530	4,500	10,164	16,600	<b>18,455</b>

\* Please refer to the corresponding notes in Appendix A for additional notes about the performance data.

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Indicators – Suncor company totals*	GRI Standards	2014	2015	2016	2017	2018
<b>Suncor Energy Foundation/Suncor Energy Inc. disbursements (distribution by funding priority):</b>						
Community Resilience \$ thousands	201-1	–	–	–	–	<b>6,411</b>
Indigenous Peoples \$ thousands	201-1	–	–	–	–	<b>4,618</b>
Energy Future \$ thousands	201-1	–	–	–	–	<b>3,402</b>
SunCares Employee Program \$ thousands	201-1	4,538	4,146	4,663	3,638	<b>2,822</b>
Place Based Priority \$ thousands	201-1	4,342	6,627	8,603	9,041	<b>9,089</b>
Building Skills and Knowledge \$ thousands	201-1	5,381	5,321	3,978	4,529	–
Collaborating for a Shared Energy Future \$ thousands	201-1	2,087	2,219	1,848	0	–
Cultivating Community Leaders \$ thousands	201-1	3,719	3,051	2,442	4,109	–
Inspiring Innovation \$ thousands	201-1	3,890	3,443	3,183	4,271	–
<b>SunCares Employee Program</b>						
Employee participation %	201-1	–	–	–	27	<b>26</b>
Organizations supported #	201-1	–	–	–	1,271	<b>1,377</b>
Value of corporate donations \$ thousands	201-1	–	–	–	1,668	<b>2,822</b>
Value of employee personal donations \$ thousands	201-1	–	–	–	1,313	<b>2,719</b>
Volunteer hours #	201-1	–	–	–	80,706	<b>73,259</b>
<b>Health and safety (note 12)</b>						
<b>Employee lost-time injury frequency</b> # per 200,000 hours worked	403-2	0.05	0.05	0.04	0.03	<b>0.02</b>
<b>Contractor lost-time injury frequency</b> # per 200,000 hours worked	403-2	0.04	0.04	0.05	0.04	<b>0.02</b>
<b>Employee recordable injury frequency</b> # per 200,000 hours worked	403-2	0.37	0.27	0.24	0.30	<b>0.30</b>
<b>Contractor recordable injury frequency</b> # per 200,000 hours worked	403-2	0.50	0.56	0.38	0.45	<b>0.41</b>
<b>Fatalities</b> #	403-2	3	0	0	1	<b>0 (A)</b>

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Indicators – Suncor company totals*	GRI Standards	2014	2015	2016	2017	2018
<b>Workforce (note 13)</b>						
<b>Suncor employees</b> #	102-7	14,425	13,235	13,243	12,649	<b>12,626</b>
<b>Full-time employees</b> #	102-8	14,056	13,042	12,888	12,389	<b>12,317</b>
<b>Part-time employees</b> #	102-8	108	97	121	111	<b>98</b>
<b>Temporary/casual employees</b> #	102-8	261	96	252	149	<b>211</b>
<b>Long-term contractors</b> #	102-8	3,231	2,663	757	809	<b>559</b>
<b>Unionized workforce</b> %	102-41	32.4	34.5	34.6	32.8	<b>33.2</b>
<b>Women</b> %	405-1	25.1	23.4	24.5	23.8	<b>23.2</b>
<b>Men</b> %	405-1	74.7	75.7	75.5	76.2	<b>76.8</b>
<b>Aboriginals/American Indians</b> %	405-1	1.5	1.6	1.9	3.0	<b>3.1</b>
<b>Visible minorities</b> %	405-1	10.4	10.3	12.6	14.7	<b>12.6</b>
<b>Persons with disabilities</b> %	405-1	0.5	0.5	0.8	0.7	<b>0.7</b>
<b>Women in management</b> %	405-1	21.7	22.4	20.1	19.0	<b>20.4</b>
<b>New employee hires</b>						
Male new employee hires %	401-1	72.8	70.7	77.0	76.9	<b>69.7</b>
Female new employee hires %	401-1	27.2	29.3	23.0	23.1	<b>30.3</b>
<b>Employee turnover</b>						
Male employee turnover %	401-1	5.0	7.6	7.0	5.8	<b>6.0</b>
Female employee turnover %	401-1	5.4	11.3	8.9	7.1	<b>6.8</b>
<b>Percentage of basic salary</b>						
Management %	405-2	96	96	96	96	<b>96</b>
Professional %	405-2	95	97	97	97	<b>97</b>
Business support %	405-2	104	103	103	102	<b>103</b>
Operations %	405-2	98	100	100	100	<b>100</b>

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# APPENDIX A: PERFORMANCE DATA NOTES

## NOTES ON PERFORMANCE DATA FOR SUNCOR'S 2019 REPORT ON SUSTAINABILITY

### 1. Overview

Performance data provided throughout our Report on Sustainability in tables and graphs includes social, environmental and economic indicators from the 2018 reporting year with 5-year trends, where feasible. Economic data is reported in a consistent manner with our Annual Report. 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

Environmental and social 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 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 & Production (E&P) includes:
  - E&P Terra Nova FPSO vessel situated off the east coast of Canada.
  - E&P North America Onshore (NAO) natural gas assets operated by Suncor. Assets were significantly divested from 2013–2015 and in 2018 Suncor sold its mineral land holdings in north-eastern British Columbia to Canbriam Energy Inc.
  - Additional information about our E&P business can be found at [www.suncor.com](http://www.suncor.com).
- f. Downstream (Refining and Supply) includes refining operations in Montreal, Sarnia, Edmonton, and Commerce City Colorado. Suncor previously operated a lubricants business in Mississauga, Ontario, which was sold on February 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.

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## 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 Annual Report.
- c. Fort Hills production is partially upgraded bitumen associated with the Paraffinic Froth Treatment Process (PFT).
- 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 & Supply 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).
- i. Our refineries that blend ethanol into gasoline are Sarnia, Montreal, Commerce City and Edmonton.

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

### 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 2014–2018 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.

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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, Ontario and British Columbia all required operators to use specified factors for the 2018 reporting year.

Alberta requires large emitting facilities to use the standard methodology and emission factors in the Carbon Competitiveness Initiative Regulation (CCIR) submission. Each of our sites that report through the CCIR successfully generated positive (approved) verifications for the 2018 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 that 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
- IPCC Guidelines for National Greenhouse Gas Inventories, 2006
- 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 1.1)
- O. Reg. 452/09: Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions 2018
- Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere 2018
- Environment Canada Facility Greenhouse Gas Reporting Program: Canada's Greenhouse Gas Quantification Requirements 2018
- Environment Canada National Inventory Report, 1990–2016
- Canadian Association of Petroleum Producers: Guide Calculating Greenhouse Gas Emissions, April 2003

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#### 5.5 Additional GHG notes

- a. Forward looking GHG estimates are based on current production forecasts and methodologies and users of this information are cautioned that the actual GHG emissions and emission intensities may vary materially. Please see Advisories.
- b. GHG emissions data from 1990 and 2000 do not include Suncor's U.S. operations, or legacy Petro-Canada facilities, and only include business areas in operation during these years. These data points have been provided for historical comparability, consistent with previous sustainability reports.
- c. 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.
- d. Suncor-wide emissions intensity uses net production, which is the sum of net facility production minus all internal product transfers. The resulting net production is our Suncor product sales to market. The sum of the business unit GHG intensities therefore will not equal the Suncor-wide intensity.
- e. 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 AB grid.
- f. Absolute (total) GHG emissions are the sum of direct and indirect emissions.
- g. Direct (Scope 1) GHG emissions are from sources that are owned or controlled by the reporting company. Refining & Supply direct emissions do not deduct CO<sub>2</sub> transfers to third parties, such as the food and beverage industries.
- h. 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.
- i. Indirect (Scope 3) GHG emissions include hydrogen purchased from third-parties and CO<sub>2</sub> volumes sold from our facilities to third-parties for further processing, and can fluctuate annually depending on supplier demand. This is consistent with provincial government reporting requirements. Additional scope 3 emissions include:
  - aviation (commercial and charter)
  - facilities (Suncor Energy Centre, East Canada and USA)
  - ground transportation services for employees and contractors
  - licensed fleet vehicles on site
  - lodges
- j. Annual variance in indirect (Scope 3) emissions from 2016–2018 is attributed to the following:
  - reporting more information (more complete data set than 2017)
  - emission factors were updated for consistency
  - scope changes
  - actual data instead of estimated
- k. 2018 Scope 3 inventory improvements allowed Suncor to report a more representative number and 2017 data has been restated for better alignment with the new calculation methodologies.

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- i.** Suncor's GHG goal is designed to encourage business choices that reduce Suncor's emissions and the emissions in the global energy system. 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 direct operations 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.

### 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 duty from third parties. The indirect energy calculation methodology 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.

### 7 Notes on other air emissions

- a.** Graphs associated with SO<sub>2</sub> and NO<sub>x</sub> emissions intensity only include facilities that are material sources of these emissions for our business. Oil Sands estimation accuracy for VOC emissions intensity is greater than +/- 10% and limited by currently accepted methodology and measurement instruments.
- b.** Other air emissions include SO<sub>2</sub>, NO<sub>x</sub> and VOC emissions.
- c.** The increase in Terra Nova's VOC emissions and emissions intensity in 2018 was mainly due to the hydrocarbon blanket gas and recovery system being offline from January to October. The hydrocarbon blanket has been operational since November of 2018.
- d.** The increase in Terra Nova's VOC emissions and emissions intensity was due to the hydrocarbon blanket gas and recovery system being offline for a large part of 2017 and 2018 when compared to ~ 100% operational in 2016. It is noted that there was an error in total VOCs reported for Terra Nova in the 2018 report. The miscalculation that occurred in the storage and handling of emissions is now corrected and reported in this 2019 report.
- e.** Air emissions include point and non-point sources.
- f.** We report to the Canadian National Pollutant Release Inventory and the US Toxic Release Inventory annually and additional information on our performance can be found through these reporting mechanisms.

### 8 Notes on water use and return

- a.** Freshwater consumption and intensity graph: water withdrawal and consumption only includes facilities that are material sources of freshwater consumption for our business. Oil sands Base plant and Fort Hills in this graph do not include industrial runoff water, which is subject to annual variances based on precipitation. Withdrawal and consumption including industrial runoff volumes are shown in the performance data tables of our Report on Sustainability. Water measurement and estimation methodology on select Refining & Marketing operations is greater than +/- 10% uncertainty.
- b.** Oil sands freshwater withdrawal and consumption graph: the methodology for this graph does not include industrial runoff volumes. Withdrawal and consumption including industrial runoff volumes are shown in the performance data tables of our Report on Sustainability.
- c.** Water consumption is the total water withdrawn minus water returned and reflects quantity of water used and not returned to its proximate source or no longer available in its original form.

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- d.** Freshwater consumption intensity is the volume of water consumed (m<sup>3</sup>) per volume of hydrocarbon produced (m<sup>3</sup>).
- e.** Oil sands base mining water withdrawal includes surface water, groundwater and industrial run-off water as per regulatory withdrawal licences and are subject to annual variances based on precipitation. Water returned is comprised of treated industrial waste-water and runoff from non-process areas that gets collected, diverted and eventually discharged to the environment (destination is the Athabasca River).
- f.** In Situ water withdrawal includes licenced groundwater wells, treated wastewater and industrial run-off water.
- g.** East Coast operations water withdrawal includes freshwater (transferred by vessel from St. John's domestic water system) bunkered to the FPSO potable water tanks for domestic use on the facility. It also includes topside seawater intake flow used for process cooling and water injection for production purposes.
- h.** Refining & Marketing surface water withdrawal sources and return destinations vary by refinery facility location.
- i.** Fresh water consumption increased due to the start up of Fort Hills. Fort Hills is building up water inventory for recycling. As we better understand our operational water use and efficiency at the site, we will continue to explore opportunities to further reduce water use.

### 9 Notes on waste management

- a.** Waste volumes are dependent on site activities or periodic equipment maintenance and may fluctuate annually.
- b.** In situ waste that is sent to deep well injection is primarily related to blowdown from our SAGD operations at Firebag consisting of concentrated water impurities that accumulate during the steam generation process. This boiler feed water is intentionally wasted from the boilers to avoid concentration of impurities during continuing evaporation of steam. Deepwell disposal methods of this nature are safe, viable and part of normal operating parameters and our operations are within the disposal limits for these waste streams (regulated by the Alberta Energy Regulator). Our operations also have exceptionally high water recycle rates, above regulated levels.
- c.** Total waste generated increased in 2018 due to increased non-hazardous waste generated from construction at Burrard Terminal, increased production at in situ sites, and the commissioning and start up of Fort Hills.

### 10 Notes on land disturbance and reclamation/tailings

- a.** Total land approved for development is consistent with the Government of Alberta's Environmental Protection and Enhancement Act (EPEA) approved footprint for Suncor's Base Plant operations, Fort Hills and our Firebag and MacKay River in situ operations, as mapped by GIS internally. Meadow Creek East is approved but not yet included.
- b.** Total land disturbed represents the total active footprint of our Base Plant mining operations, Fort Hills operations and approved in situ projects, which including the cumulative hectares (ha) for areas cleared of vegetation, soil disturbed, ready for reclamation, soils placed and permanently reclaimed. The categories used are consistent with reporting to the Alberta Energy Regulator (AER) in the annual reports.
- c.** Land reclaimed is land that is no longer being used for mine or plant purposes or in situ production purposes and has been permanently or temporarily reclaimed. This value is a subset of the total active footprint. Reclamation is presented as a cumulative number, therefore the total number of hectares reported from year to year may increase depending on whether reclamation has occurred or whether re-disturbance of previously reclaimed areas was required. Permanently reclaimed lands have met the authorized plans for soil placement and re-vegetation but have not been certified by the Alberta Energy Regulator.
- d.** Total volume of untreated fluid tailings total inventory at the end of the 2018 reporting period Base plant had 273 million m<sup>3</sup>, which is 37 million m<sup>3</sup> below the approved fluid tailings profile. Base plant also had 119 million m<sup>3</sup> of water stored for recycling in our tailings facilities.

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## 11 Notes on environmental compliance

- a. New in 2018, we have improved the environmental compliance metrics we report on a company-wide level, which better align with our internal tools, processes and metrics and also to Global Reporting Initiative Standards. Our focus is always in incident prevention, and all spill events are recorded and investigated. Root cause is determined and remedial actions are implemented to minimize risk and chance of recurrence. Historical environmental compliance metrics using this improved methodology aren't available; however, prior year environmental compliance information is accessible in past versions of our Report on Sustainability.
- b. Environmental non-compliance data aligns with our Risk Matrix (defined by Suncor) and guiding principles for managing risk and reflects at minimum an event triggering a regulatory exceedance or non-compliance, resulting in a regulatory investigation and administrative actions and/or more stringent penalties imposed on Suncor.
- c. Environmental regulatory fines also align to our Risk Matrix, and reflect financial penalties levied by the Regulator or the Courts and paid in the reporting year as a result of a regulatory non-compliance or exceedance. Includes administrative penalties, but not enforcement tickets.
- d. Significant spills reflect unplanned or accidental release of material whose impact off property takes longer than 7 months to remediate, or on property one year or more to remediate or reclaim. These could be into the environment or into a location that does not usually contain the material, as specified by geographical regulation.
- e. Our enterprise wide environmental compliance metrics help identify incidents with our the greatest environmental and regulatory risk. The intent of these metrics is to learn from environmental incidents in order to prevent reoccurrence and promote the consistent enterprise-wide application of appropriate mitigations.
- f. The sum of fines paid during the reporting period was due to Colorado Department of Public Health & Environment (CDPHE) Compliance Advisory documenting the 2018 Annual Air Program Inspection findings.

## 12 Notes on health and safety

- a. Since 2014, health and safety data reported for Upstream Terra Nova represents our E&P business segment, including North America Onshore. This reflects the significant divestments in our conventional natural gas business since 2013.
- b. Since 2014, Downstream Refining & Supply health and safety data includes our St. Clair ethanol plant. Our U.S. operations use the Occupational Health and Safety Administration (OSHA) definitions to classify their injuries, which differ slightly from Canadian standards.
- c. Lost time injury is a work related injury that results in lost days from work. Fatalities are included in lost time injuries. Frequency is calculated as the number of lost time injuries multiplied by 200,000 (based on 100 workers working full time for one year) divided by the actual exposure hours. This tells us how many workers who are injured for every 100. Prime contractor incident data is excluded from this metric.
- d. Recordable injury frequency is the number of recordable injuries (including medical treatment, restricted work access and lost time) multiplied by 200,000 (based on 100 workers working full time divided by the actual exposure hours). This tells us how many people are injured for every 100 workers in a calendar year. Prime contractor incident data is excluded from this metric.
- e. Beginning in 2018, the health and safety data reflects the new regional organizational structure for Suncor's operations in the Regional Municipality of Wood Buffalo (RMWB). This now reflects health and safety data for Suncor's Fort Hills Operations and the Regional Services organization: a team which provides support services to Suncor's assets in the RMWB.
- f. Contractors refer to any organization, company or individual who provides goods and/or services to Suncor.
- g. Fatalities are reported for employees and contractors (excluding prime contractors). The prime contractor for a work site is (a) the contractor, employer or other person who enters into an agreement with the owner of the work site to be the prime contractor, or (b) if no agreement has been made or if no agreement is in force, the owner of the work site. Prime contractors have full care, custody and control meaning they manage their own work and are responsible for maintaining safe working environments. Tragically 3 employees and two prime contractors were fatally injured in 2014. In 2017, a contract worker was fatally injured when inside an excavation.

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## 13 Notes on workforce

- a. New employee hires are any externally hired regular full-time or part-time employee whose permanent start date falls within the reporting period.
- b. Employee turnover is the percentage of employees who leave Suncor under any circumstance in the reporting year. Only terminations are included for full-time and part-time employees.
- c. Suncor employees include regular full-time, regular part-time, students, casuals or temporary employees. Leaves, other than long-term disability, such as maternity, paternity, personal leave, as well as short-term disabilities, are considered active and are included.
- d. Beginning in January 2015, as part of an overall cost management program that began in 2014 accelerated by a low crude price environment, Suncor reduced the size of our workforce primarily through our contract workforce, not backfilling attrition for non-critical positions, and employee reductions.
- e. Long-term contractors are individual workers engaged as a Contractor to support short-term, variable work.
- f. Unionized workforce data is only applicable in areas where there is a unionized environment.
- g. Certain operating regions prohibit collecting information on gender; therefore diversity data may not be reflective of our entire workforce due to data availability. Workforce diversity is calculated based on information provided voluntarily by employees. Indicators referring to ethnicity and disability reflect only those employees who consented to release of this information.
- h. Management is classified as front-line leaders, mid-level leaders, members of the management committee or members of the corporate committee.

## 14 Notes on economic performance

- a. Select economic figures have been calculated according to the International Financial Reporting Standards (IFRS). For complete disclosure of our financial information, see our 2018 Annual Report.
- b. OS&G expenses are subject to historical restatements due to reclassifications within our income statement. Employee costs are reported in our Annual Report under Operating, Selling & General and include salaries, benefits and share-based compensation. Typically a portion of employee costs are capitalized as part of fixed assets.
- c. Royalties and taxes paid include monies remitted to government, including income, property, and other taxes, Crown royalties, and lease bonuses and rentals.
- d. Under GRI Standard 201-1, economic value retained reflects the direct economic value generated (revenues) minus economic value distributed (operating costs (including employee costs), taxes and royalties paid, distribution to shareholders and community investments).
- e. Capital and exploration expenditures includes capitalized interest.
- f. As of June 1, 2016, Suncor no longer makes political contributions as a matter of policy, except in exceptional circumstances. Any such contributions will continue to be disclosed in this report.
- g. Local goods and services spend reflects goods or services purchased in the area of operations. Suncor-wide spend excludes Syria and Libya.
- h. Indigenous businesses include those with a minimum of 51% ownership by Indigenous individuals or organizations.
- i. Values reported for Indigenous supplier revenues earned for 2013 include GST. Beginning in 2014, values reported reflect amounts captured in our enterprise software data management system, minus 5% GST.

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**j.** Inclusion of contracts in the reporting year is based on the payment date, not the date of services rendered.

**k.** Indigenous supplier spend includes Canadian-wide spend across Suncor's operations.

**l.** In prior years, the Enterprise Value was mistakenly reported as Market Capitalization, with the difference between the two being that Enterprise Value includes debt and deducts cash and cash equivalents. Going forward, we will continue to report the Enterprise Value. For disclosure on Market Capitalization, see our 2018 Annual Report.

**15 Notes on community investments**

**a.** Since 2014, values for community investments have been calculated by Suncor and the Suncor Energy Foundation (SEF). The SEF is audited annually by PricewaterhouseCoopers (PwC).

**b.** Value of Time Donations is reported by employees to Suncor voluntarily. The hours represent hours volunteered during working hours.

**c.** Value of Management Cost Donations from 2014-2018 is for the Suncor Energy Foundation only.

**d.** External resources leveraged represents cash and in-kind value generated as a result of Suncor's involvement, but which is not a cost to the company (e.g. employee contributions through our SunCares employee programs, food donations, and matching donations from other funders).

**e.** The SEF is limited to providing donations to registered Canadian charitable organizations, and Suncor's contribution to SEF represents donations, operating budget and appropriate allocations to a reserve fund which protects multi-year commitments going forward. Charitable contributions to the community made by the SEF are included in the disbursement values shown by funding priority.

**f.** Suncor launched a new SunCares employee program in 2017, and prior year data is not available. Corporate donations include corporate rewards, grants and the value of volunteer time during work hours. Employee personal donations include employee and retiree donations and donations made through the public SunCares Community Impact Portal.

**g.** In 2018, Suncor community investment and the SEF refreshed their strategy with a focus on three new priorities for funding – Energy Future, Indigenous Peoples and Community Resilience. 2018 data represents these new funding priorities.

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# APPENDIX B: INDEPENDENT ASSURANCE STATEMENT



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## INDEPENDENT ASSURANCE STATEMENT

To the Board of Directors and Management of Suncor Energy Services Inc. (Suncor)

### Scope of our Engagement

Our responsibilities included providing limited assurance over a selection of performance indicators as presented in Suncor's 2019 Report on Sustainability (the Report).

### Subject Matter

We have performed limited assurance procedures for the following quantitative performance indicators as presented in the respective sections of the Report and the overall performance data tables for the year ended December 31, 2018 (the Subject Matter). Unless otherwise noted, the indicators were assured on a corporate-wide basis.

- Total upstream and downstream production (53.95 million m<sup>3</sup>/year)
- Upstream processed volumes and net production (34.19 million m<sup>3</sup> OE/year)
- Downstream net production (26.92 million m<sup>3</sup> refined product/year)
- Greenhouse Gas (GHG) Scope 1 and 2 emissions (21,990 thousand tonnes CO<sub>2</sub>e)
- GHG emissions intensity (0.39 tonnes CO<sub>2</sub>e/m<sup>3</sup>)
- Water withdrawal (144.69 million m<sup>3</sup>)
- Water withdrawal intensity (2.68 m<sup>3</sup>/m<sup>3</sup>)
- Employee and Contractor fatalities (0 fatalities)
- Total land disturbed (Oil Sands Base plant only) (22,224 cumulative hectares)
- Total land reclaimed (Oil Sands Base plant only) (2,324 cumulative hectares)

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Suncor has prepared its performance data in accordance with the Global Reporting Initiative (GRI) GRI Sustainability Reporting Standards (GRI Standards) and internally developed criteria (the Criteria).

**Suncor Management Responsibilities**

The Report was prepared by the management of Suncor, who is responsible for the assertions, statements, and claims made therein including the assertions we have been engaged to provide limited assurance over, collection, quantification and presentation of the performance indicators and the criteria used in determining that the information is appropriate for the purpose of disclosure in the Report. In addition, management is responsible for maintaining adequate records and internal controls that are designed to support the reporting process.

**Our Responsibilities**

Our limited assurance procedures have been planned and performed in accordance with the International Standard on Assurance Engagements (ISAE) 3000 “Assurance Engagements other than Audits or Reviews of Historical Financial Information”.

Our procedures were designed to obtain a limited level of assurance on which to base our conclusion. The procedures conducted do not provide all the evidence that would be required in a reasonable assurance engagement and, accordingly, we do not express a reasonable level of assurance. While we considered the effectiveness of management’s internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls and, accordingly, we express no conclusions thereon.

This assurance statement has been prepared for Suncor for the purpose of assisting management in determining whether the Subject Matter is in accordance with the Criteria and for no other purpose. Our assurance statement is made solely to Suncor in accordance with the terms of our engagement. We do not accept or assume responsibility to anyone other than Suncor for our work, or for the conclusions we have reached in this assurance statement.

**Assurance procedures**

We planned and performed our work to obtain all the evidence, information and explanations considered necessary in relation to the above scope. Our assurance procedures included but were not limited to:

- Interviewing relevant personnel at the head office and at various sites to understand data management processes related to the selected performance indicators.
- Checking the accuracy of calculations performed – on a test basis – primarily through inquiry, variance analysis and performance of re-calculations.
- Checking that data and statements have been correctly transcribed from the corporate system into the Report.
- Assessing risk of material misstatement due to fraud or errors relating to the selected performance indicators.
- Evaluating the overall presentation of the Report, including the consistency of the Subject Matter.

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Our scope of work did not include expressing conclusions in relation to:

- The materiality, completeness or accuracy of data sets or information relating to areas other than the Subject Matter, and any site-specific information.
- Information reported outside of the Report.
- Management's forward looking statements.
- Any comparisons made by Suncor against historical data.
- The appropriateness of definitions for internally developed criteria.

**Independence and competency statement**

In conducting our engagement, we have complied with the applicable requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants (IESBA).

**Our Conclusion**

Based on our procedures for this limited assurance engagement as outlined above, nothing has come to our attention that causes us to believe that the Subject Matter is not, in all material respects, reported in accordance with the relevant criteria.



Ernst & Young LLP

Calgary, Canada

July 17, 2019

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# APPENDIX C: ADVISORIES

## FORWARD-LOOKING STATEMENTS

Suncor's 2019 Report on Sustainability 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 2019 Report on Sustainability include references to: that the integrated pillars of sustainability will continue to guide Suncor as it embarks on the next phase of its evolution and that Suncor will harness the possibilities of innovation, technology and digital to become better at what it does; that Suncor will be guided by its purpose, the expected requirements of doing so and that doing so will guide Suncor to deliver economic prosperity, improved social well-being and healthy environment for today and tomorrow; the belief Suncor must foster a workplace culture where everyone is inspired to be and give their best in order to unleash the full potential of Suncor's people and the steps Suncor will take to create such a workplace; the belief that through Suncor 4.0, Suncor will be able to stay ahead of the curve relating to the changing energy and business landscape; the belief that Suncor has an important role to play in the transformation of the energy system towards a low carbon economy and that innovation will be critical to its success; that Suncor will continue to innovate at an accelerated level to improve environmental performance and address complex social challenges; statements about Suncor's social goal, including the expectation that Suncor will continue to expand its efforts in support of the goal and the manners in which it will do so and the factors that will allow Suncor to achieve this goal; statements regarding Suncor's goal to decrease overall GHG emissions intensity of its production of oil and petroleum products by 30% by 2030, including that Suncor can see a realistic path to achieving such goal, the areas of focus to achieve this goal, the factors that will allow Suncor to meet this goal and that the goal will move Suncor toward ultimately bending the curve on the company's absolute GHG emissions; the potential impact of in situ technology on GHG emissions from operations and the timing of such technologies; that technological advances will help Canada earn the trust needed to be the progressive supplier of choice to the global community; the belief that Canadian energy is some of the most responsible energy on the planet and that the Canada oil and gas industry will remain part of the energy mix; Suncor's plan to remain resilient and thrive in a low carbon economy and the steps it will take to do so, including through investments in technology development and deployment; Suncor's belief that a 'zero incident' workplace is achievable; the expected benefits from the WTDC being operational; the impacts of properly managing, or failing to properly manage, our priorities (capital discipline, operational excellence, long-term profitable growth and safety) as well as environmental and/or social issues; the belief that Suncor's focus on operational excellence will help unlock the full value of its resources; that Suncor's flexible business model will allow it to capture the shift in value between operating segments during periods of market volatility and limit its exposure to crude differentials; that the company's midstream assets and pipeline commitments will provide operational flexibility to Suncor; that Suncor will be an energy supplier of choice for decades to come; that Suncor will become even better at scenario-planning and the expected benefits therefrom; that Suncor can continue to generate strong shareholder value while responsibly producing the energy the world needs; Suncor's intention to create a new long-term water goal; Suncor's support of the United Nations SDGs and the actions Suncor will take in connection therewith; expectations for renewable power development, including its potential to contribute to both Suncor's GHG and social goal, the manner and areas in which Suncor will proceed with such projects including the Forty Mile Wind Power Project, the effect technology will have in the renewables area and the impacts of such development; the potential impact of blending ethanol into gasoline on CO<sub>2</sub> emissions; the expected benefits of OEMS; the impact our governance framework has on raising the bar on sustainable project development and the expected benefits of integrating sustainability into our process for developing physical assets; the anticipated benefits from communication with government officials and other stakeholders; the belief that a carbon price signal that incents the right behaviour is effective policy to address the Canadian oil and gas industry's GHG emissions; the requirements to achieve a unified Canadian energy vision for 2050; statements regarding current and future government regulations regarding GHG emissions and the expected impacts thereof; the belief that the major pipeline projects are critical and will bring responsibly developed Canadian crude oil to new and expanded markets; that construction on the Enbridge Line 3 replacement will commence and that the line will go into service in 2020; the expectation that Suncor will continue to work with stakeholders with respect to market access objectives; statements about Suncor's long-term goal with respect to inclusion and diversity, including the belief that breaking down barriers will help Suncor improve the way it works together to achieve goals and the belief that a feeling of inclusion will positively contribute to strong employee engagement and business performance; the belief that additional disclosure about the resilience of our business strategy benefits shareholders and stakeholders; that Suncor will continue to be an active partner as the world works to solve this energy and climate dilemma and that Suncor will play an important role investing in technology and innovation to reduce GHG emissions and continue to collaborate with others to help us all move toward a low carbon future; the belief that Suncor and Canada are uniquely positioned to continue to deliver the energy the world needs; the expectation that all types of energy will be needed and no single solution or pathway will meet the challenge and

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the reasons for such beliefs; the belief that the amount of energy the world will require will continue to increase and in order to avoid the worst impacts of climate change, collectively the world will have to tackle the emissions challenge associated with that growth by taking urgent action; expectations regarding demand for energy, oil, natural gas, distillates, gasoline, biofuels, diesel and other energy sources as well as the reasons for such expectations; the belief that the number of companies reporting on climate risk will continue growing; that Suncor will continue to take steps to develop a 2°C scenario that looks beyond 2040 to include in its business strategy review and will provide and update on this process next year; the expected requirements to achieve the aims and objectives of the Paris Agreement; the belief that technology and energy innovation has the potential to move emissions reduction from incremental to step change improvement; 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 Suncor plans effectively for potential future business environments; expectations relating to increasing low carbon power generation capacity and that it will support our own needs while reducing the carbon intensity of Alberta's power grid; the belief that a broad-based price on carbon can be a key market mechanism to lower emissions; statements about the TCFD, including the expected benefits from disclosure of climate-related financial information and that global context is required to provide a complete picture of operational performance, strategic planning and risk management; statements about Fort Hills, including the expectation that GHG intensity will decline further as the facility operates at steady state design capacity and that the less carbon intensive paraffinic froth treatment will result in a GHG intensity of production roughly on par with the average crude refined in the U.S.; estimates of Suncor's future GHG emissions and emissions intensity; statements about the potential opportunity to develop a utility-scale photovoltaic facility in Alberta; expectations relating to technology and the expected impacts and benefits therefrom, including, amongst others, technology being designed, developed or tested by Suncor and its partners such as in situ extraction technologies, SAGD, Solvent+, EASE, ESEIEH®, ES-SAGD, non-aqueous extraction, thermal-solvent technologies, solvent-only technologies, steam-solvent technologies, high temperature reverse osmosis produced water treatment, mild thermal cracker technology, well-bore technologies, novel subsurface technologies, alternative gas co-injection, froth treatment tailings, drone technology, in situ demonstration facility, SAGD LITE, well-bore enhancements, WTDC, permanent aquatic storage solution, demonstration pit lake, paraffinic froth treatment, autonomous haulage systems, Nikanotee Fen and wastewater treatment membrane ultrafiltration; the belief that the solution to lowering the carbon intensity of producing bitumen and improve cost competitiveness will be a hybrid of the technologies we're progressing and that some of these technologies could be applied to existing facilities or new growth facilities which would, if successful, significantly reduce our GHG emissions intensity; Suncor's base case energy outlook, including the trends that are incorporated therein; long-term energy future scenarios used to test Suncor's business and growth strategy, the trends that shape them and the expected impact of the scenarios on the energy markets generally and Suncor specifically; opportunities for advancing energy efficiency involving Syncrude; the expectation that oil sands facilities, once operating, will last 40 plus years with a steady output and can continue to operate with low operating costs and sustaining capital requirements and provides a unique opportunity to advance technologies to reduce emissions; expectations for fleet emissions and internal combustion engines in the future; expectations relating to hybrid, plug-in hybrid and electric vehicles; statements regarding the construction and operation of a coast-to-coast electric vehicle fast-charging network, including that it will enable us to learn more about this emerging market while continuing to evaluate options and respond to the evolving needs of customers, the timing of the project and the speed in which charges will be able to be delivered; that opportunities are created due to the requirement for steam at crude oil extraction and processing facilities; the impact of scale on renewable power and the belief that equipping wind and solar sites with battery storage could further improve effectiveness; statements about the replacement of coke-fired boilers with cogeneration units, including the expected amount of electricity which will be exported to the provincial grid, the timing associated with this project and the factors expected to impact whether or not this project is sanctioned; the belief that integrating sustainability into our supply chain will act as a driver of change, and the processes that will be used to foster the integration; the expected impact of Canadian climate change regulations and the expectations about the actions and areas of focus of governments around the world as it relates to the transition to a lower carbon system; Suncor's facility resilience to extreme weather events, including temperature extremes, hurricanes and icebergs and precipitation, droughts and wildfires including the expected impact of Suncor's mitigation steps to such events; the estimated impact of our carbon price outlook; that Suncor will continue to explore opportunities to further reduce water use; the expectation that the closed loop system at Lake Miwasin will allow water to be naturally released to the environment; statements about COSIA, including the expectation that COSIA will help reduce the regional, operational footprint and better protect natural water resources as well as improve tailings management, its goal of reducing its operational footprint intensity by 10% by 2022; that a high temperature membrane plant could reduce the energy required and infrastructure for the SAGD water treatment process; that another tailings pond will be removed from Base plant operations in the next few years because of PASS technology; the belief that our approach to tailings management will continue to evolve; statements about coke capping technology, including its expected benefits; the expectation that the ratio of land being disturbed by development will decline as reclamation continues to increase; the belief that the Boreal Habitat Conservation Initiative will ensure the larger boreal forest ecosystem will remain undisturbed and biodiversity will be preserved; statements about the SEF and the benefits Suncor expects SEF to deliver; the belief that digital technology will help improve the safety, productivity, reliability and environmental performance of our operations; the

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expectation that downstream emissions associated with refining product will be reduced; the expected benefits from ongoing and future construction phases of the wastewater treatment facility at Commerce City; statements about Suncor's downstream carbon reduction initiatives and their expected benefits; the anticipated benefits from digitization initiatives such as advanced analytics, remote sensing technologies and robotic process automation;

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; 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; 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 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, tariffs, quotas and other government-imposed compliance costs and mandatory production curtailment orders and changes thereto; 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 we have material relationships to perform their obligations to us; 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 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 risk management 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

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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 2019 dated May 1, 2019 and its Annual Information Form, Form 40-F and Annual Report to Shareholders, each dated February 28, 2019, 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.

**NON-GAAP MEASURES**

Oil Sands operations cash operating costs per barrel is not prescribed by Canadian generally accepted accounting principles ("GAAP"). For the year ended December 31, 2018, this non-GAAP measure is defined and reconciled in Suncor's Annual Report to Shareholders for dated February 28, 2019. For the year ended December 31, 2011, this non-GAAP measure is defined and reconciled in Suncor's Management Discussion and Analysis for the year ended December 31, 2013 dated February 24, 2014. This non-GAAP measure does not have any standardized meaning and therefore is unlikely to be comparable to similar measures presented by other companies. This non-GAAP measure is included because management uses the information to measure Oil Sands operating performance, and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP.

**RECLAMATION**

Land is considered permanently reclaimed when landform construction and contouring, clean material placement (as required), reclamation material placement and revegetation has taken place. Land cannot be listed under permanent reclamation until revegetation has occurred which is reflective of the approved Reclamation and Revegetation Plans. Suncor has reclaimed a cumulative total of 48.2 hectares of wetlands and lakes.

**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 and 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**

References to "Suncor", "we", "our" and "the company" in Suncor's 2019 Report on Sustainability mean Suncor Energy Inc., its subsidiaries, partnerships and interests in associates and jointly controlled entities, unless the context otherwise requires.

**PARTNERSHIPS**

The use of "partnership" throughout Suncor's 2019 Report on Sustainability does not necessarily mean a partnership in the legal context.

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# APPENDIX D: GRI AND SASB

## GRI CONTENT INDEX

This Report on Sustainability has been prepared in accordance with the Core option of the Global Reporting Initiative (GRI) Standards with additional use of the GRI's Oil and Gas Sector Disclosures. We've also integrated our commitment and implementation of the United Nations Global Compact (UNGC) principles throughout the report, and provided corresponding linkages to principles addressed in the table below.

This index describes:

- which GRI Standards and material topics have been covered in this report
- where to find additional information in this report, other public disclosures, or omissions
- standards that have been externally assured

GRI Standards	Description	Response, link or additional information	UNGC principle(s)
<b>GRI 101: FOUNDATION 2016</b>			
N/A	Principles for defining report content and quality, and the process for sustainability reporting using the GRI Standards.	Throughout this report, we have adhered to the following principles: <ul style="list-style-type: none"> <li>• stakeholder inclusiveness</li> <li>• sustainability context</li> <li>• materiality</li> <li>• completeness</li> <li>• accuracy</li> <li>• balance</li> <li>• comparability</li> <li>• reliability</li> <li>• timeliness</li> </ul>	
<b>GRI 102: GENERAL DISCLOSURES 2016</b>			
<b>Organizational profile</b>			
102-1	Name of the organization	Suncor Energy Inc.	
102-2	Activities, brands, products and services	<a href="#">Operations summary</a> (p. 35)	
102-3	Location of headquarters	Calgary, Alberta (Canada)	
102-4	Location of operations	<a href="#">Operations summary</a> (p. 35)	
102-5	Ownership and legal form	2018 Annual Information Form (p. 5)	
102-6	Markets served	<a href="#">Operations summary</a> (p. 35)	
102-7	Scale of the organization	<a href="#">Operations summary</a> (p. 35) <a href="#">Performance data</a> (p. 145) 2018 Annual Report	
102-8	Information on employees and other workers	<a href="#">Performance data – workforce</a> (p. 145)	6
102-9	Supply chain	<a href="#">Economic impact</a> (p. 37)	
102-10	Significant changes during the reporting year to the organization and its supply chain	<a href="#">Performance data</a> (p. 145) 2018 Annual Report (pp. 27–29)	

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
102-11	Precautionary Principle or approach	<a href="#">About Suncor</a> (p.11)	7
102-12	External initiatives	<a href="#">Biodiversity</a> (p. 97) <a href="#">Policy engagement</a> (p. 27) <a href="#">Collaboration</a> (p. 140)	
102-13	Membership of associations	<a href="#">Lobbying and disclosure</a> (p. 32)	
<b>Strategy</b>			
102-14	Statement from senior decision-maker	<a href="#">CEO message</a> (p. 3)	
102-15	Key impacts, risks and opportunities	<a href="#">Corporate governance</a> (p. 23) <a href="#">Economic impact</a> (p. 37) <a href="#">Performance data</a> (p. 145) <a href="#">Risk management</a> (p. 25) <a href="#">Climate change</a> (p. 53) <a href="#">Sustainability goals</a> (p. 15) Suncor's Climate Report	
<b>Ethics and integrity</b>			
102-16	Values, principles, standards and norms of behavior	<a href="#">Ethical business conduct</a> (p. 43)	1, 2, 6, 10
102-17	Mechanisms for advice and concerns about ethics	<a href="#">Ethical business conduct</a> (p. 43)	1, 2, 10
<b>Governance</b>			
102-18	Governance structure	<a href="#">Corporate governance</a> (p. 23) Schedule B: Corporate Governance Summary of our 2019 Management Proxy Circular	
102-19	Delegating authority	Suncor Energy Inc. Management Proxy Circular 2019; (Schedule B: Corporate Governance Summary – Risk Oversight, pp. B-8 to B-9) Additionally, a Strategic Issues Management Process is in place to effectively manage our strategic issues. The process identifies, monitors and manages key environmental, economic and social issues most critical to our business and our external stakeholders and sets up a governance system to oversee the management of the issues.	
102-20	Executive-level responsibility for economic, environmental, and social topics	We have several senior leadership positions whose roles include sustainability oversight in the organization, including but not limited to: <ul style="list-style-type: none"> <li>• chief sustainability officer (directly reports to the CEO)</li> <li>• general manager, sustainability</li> <li>• general manager, Indigenous &amp; community relations</li> </ul>	
102-21	Consulting stakeholders on economic, environmental, and social topics	For additional information about stakeholder feedback with our Board of Directors, refer to our 2019 Management Proxy Circular (Schedule B: Corporate Governance Summary – Stakeholder Communications and Shareholder Engagement p. B-7 to B-8)	

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
102-22	Composition of the highest governance body and its committees	Suncor Energy Inc. Annual Information Form dated March 1, 2019 (Directors and executive officers, pp. 72–76)	
102-23	Chair of the highest governance body	Suncor Energy Inc. Management Proxy Circular 2019 (Schedule C: Position description for independent board chair)	
102-24	Nominating and selecting the highest governance body	Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary, pp. B2 to B3), (Schedule C: Position description for independent board chair, p. C-1) and (Schedule E: Board Terms of Reference, p. E-3)	
102-25	Conflicts of interest	Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Conflicts of Interest, pp. B-14 to B-15)	10
102-26	Role of the highest governance body in setting purpose, values, and strategy	Suncor Energy Inc. Management Proxy Circular 2019 (Schedule E: Board Terms of Reference – Part IV: Mandate of the Board of Directors, pp. E-4 to E-5)	1, 7, 8
102-27	Collective knowledge of highest governance body	Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Orientation and Continuing Education, pp. B-12 to B-13)  Additionally, our Board of Directors receive periodic reports from our Chief Sustainability Officer. The Environment, Health, Safety & Sustainable Development committee of the board also receives quarterly updates and stewardship on our priority sustainability issues.	
102-28	Evaluating the highest governance body's performance	The board completes an annual self-evaluation. For details, see the Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Annual Evaluation Process, pp. B-5 to B-6)  Specific information about topics reviewed and action plans that are developed are confidential and not reported.	
102-29	Identifying and managing economic, environmental and social impacts	The board oversees Suncor's Enterprise Risk Management Program. For details, see the Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Risk Oversight, pp. B-8 to B-9)	1, 2, 7, 8, 9, 10
102-30	Effectiveness of risk management processes	The board oversees Suncor's Enterprise Risk Management Program. For details, see the Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Risk Oversight, pp. B-8 to B-9)	1, 2, 7, 8, 9, 10
102-31	Review of economic, environmental and social topics	The board oversees Suncor's Enterprise Risk Management Program. For details, see the Suncor Energy Inc. Management Proxy Circular 2019 (Schedule B: Corporate Governance Summary – Risk Oversight, pp. B-8 to B-9)	1, 2, 7, 8, 9, 10
102-32	Highest governance body's role in sustainability	Our Executive Leadership Team, including the CEO, review and approve this report prior to publication.	
102-33	Communicating critical concerns	Issues of concern are elevated through the Strategic Issues Management Process to a senior leadership governance body. The Environment, Health, Safety & Sustainable Development committee of the board also reviews the effectiveness to which we achieve objectives pertaining to the environment, health, safety and sustainable development. This committee also receives a quarterly update and stewardship on our priority sustainability issues.	1, 10

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
102-34	Nature and total number of critical concerns	Throughout 2018, key issues remained focused on climate change, water and engagement activities with local stakeholders and Indigenous communities. In depth discussions, goal setting and initiatives to address these issues have been ongoing and will continue to evolve.	
102-35	Remuneration policies	For more information, see the Suncor Energy Inc. Management Proxy Circular 2019 (Board of Directors Compensation and Executive Compensation, pp. 14–52)	10
102-36	Process for determining remuneration	Suncor Energy Inc. Management Proxy Circular 2019 (Board of Directors Compensation and Executive Compensation, pp. 14–52)	10
102-37	Stakeholders involved in remuneration	Suncor Energy Inc. Management Proxy Circular 2019 (Advisory Vote on Approach to Executive Compensation, p. 13)	
<b>Stakeholder engagement</b>			
102-40	List of stakeholder groups	<a href="#">Stakeholder and Indigenous relations</a> (p. 104)	
102-41	Collective bargaining agreements	<a href="#">Performance data – workforce</a> (p. 145)	1, 3
102-42	Identifying and selecting stakeholders	<a href="#">Stakeholder and Indigenous relations</a> (p. 104)	
102-43	Approach to stakeholder engagement	<a href="#">About our report</a> (p. 6) <a href="#">Stakeholder and Indigenous relations</a> (p. 104)	
102-44	Key topics and concerns raised	<a href="#">About our report</a> (p. 6) <a href="#">Stakeholder and Indigenous relations</a> (p. 104) <a href="#">Climate change</a> (p. 53) <a href="#">Personal and process safety</a> (p. 41) <a href="#">Water performance and stewardship</a> (p. 85) Suncor's Climate Report	
<b>Reporting practice</b>			
102-45	Entities included in the consolidated financial statements	Suncor Energy Inc. Annual Report 2018, pp. 26–28  For more information about the entities not covered in this report, refer to the performance data page(s).	
102-46	Defining report content and topic boundaries	<a href="#">About our report</a> (p. 6)	
102-47	List of material topics	<a href="#">About our report</a> (p. 6)	
102-48	Restatements of information	Re-statements of information and associated justifications provided in earlier reports can be found in the notes supporting our performance data table.	
102-49	Changes in reporting	Significant changes from previous reporting periods in scope, boundary or measurement methods can be found in the notes supporting our performance data table.	
102-50	Reporting period	January 1 – December 31, 2018 (unless otherwise stated)	
102-51	Date of most recent report	July, 2018	

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
102-52	Reporting cycle	Annual	
102-53	Contact point for questions regarding the report	1-866-SUNCOR-1 (1-866-786-2671) or email us at <a href="mailto:sustainability@suncor.com">sustainability@suncor.com</a>	
102-54	Claims of reporting in accordance with the GRI Standards	This report has been prepared in accordance with the GRI Standards: Core option.	
102-55	GRI Content Index	The GRI content index as available for download and as an appendix to Suncor's Report on Sustainability.	
102-56	External assurance	An independent third-party has provided assurance on selected key performance indicators for our Report on Sustainability. The assurance report and indicators that were reviewed can be found on the performance data page.	
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
103-1	Management approach for material topics	Our management approach to material sustainability priorities in this 2019 Report on Sustainability are presented in the following sections:	1, 2, 6, 7, 8, 9, 10
103-2		<a href="#">CEO message</a> (p. 3)	
103-3		<a href="#">Corporate governance</a> (p. 23)	
		<a href="#">Policy engagement</a> (p. 27)	
		<a href="#">Economic impact</a> (p. 37)	
		<a href="#">Personal and process safety</a> (p. 41)	
		<a href="#">Ethical business conduct</a> (p. 43)	
		<a href="#">Inclusion and diversity</a> (p. 46)	
		<a href="#">Climate change</a> (p. 53)	
		<a href="#">Water performance and stewardship</a> (p. 85)	
		<a href="#">Tailings management</a> (p. 88)	
		<a href="#">Air quality</a> (p. 82)	
		<a href="#">Land and reclamation</a> (p. 92)	
		<a href="#">Biodiversity</a> (p. 97)	
		<a href="#">Stakeholder and Indigenous relations</a> (p. 104)	
		Suncor's Climate Report	
		In 2018, 19 grievances mostly related to noise and environmental impacts were documented through our formal grievance mechanism. All of the grievances have been addressed and many have been resolved. Although all have been addressed, some may still be in progress and on their way to being resolved.	

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<b>GRI 200: TOPIC SPECIFIC STANDARDS – ECONOMIC</b>			
<b>GRI 201: Economic performance 2016</b>			
201-1	Direct economic value generated and distributed	<a href="#">Performance data</a> (p. 145)	10
201-2	Financial implications and other risks and opportunities due to climate change	<a href="#">CEO message</a> (p. 3) <a href="#">Climate change</a> (p. 53) Suncor's Climate Report Suncor's 2019 CDP Climate Change Response (C2)	7
201-3	Defined benefit plan obligations and other retirement plans	Suncor Energy Inc. Annual Report 2018 (pp. 110–114)	
201-4	Financial assistance received from government	Federal (Canada) and Provincial Government funding is publicly reported and available through the Office of the Commissioner of Lobbying of Canada. For more information about our public policy participation, visit the following pages: <a href="#">Policy engagement</a> (p. 27) <a href="#">Lobbying and disclosure</a> (p. 32)	
<b>GRI 203: Indirect economic impacts 2016</b>			
203-1	Infrastructure investments and services supported	<a href="#">Economic impact</a> (p. 37) <a href="#">Community investment</a> (p. 108)	
203-2	Significant indirect economic impacts	<a href="#">Economic impact</a> (p. 37) <a href="#">Partnering with Indigenous businesses</a> (p. 120)	
<b>GRI 204: Procurement practices 2016</b>			
204-1	Proportion of spending on local suppliers	<a href="#">Economic impact</a> (p. 37) <a href="#">Performance data</a> (p. 145)	10
<b>GRI 205: Anti-corruption 2016</b>			
205-1	Operations assessed for risks related to corruption	<a href="#">Ethical business conduct</a> (p. 43) Risks related to bribery and corruption related to our foreign operations can be found in our Annual Information Form dated February 28, 2019 (p. 63).	
205-2	Communication and training about anti-corruption policies and procedures	<a href="#">Ethical business conduct</a> (p. 43) Training specific to the prevention of improper payments is provided on a targeted basis to certain individuals in high-risk jobs and jurisdictions. Certain third party business associates are also provided with anti-corruption training, based on assessed risk.	

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
<b>GRI 206: Anti-competitive behavior 2016</b>			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	<p><a href="#">Ethical business conduct</a> (p. 43)</p> <p>No regulatory enforcement actions were initiated for anti-competitive conduct against Suncor in 2018.</p> <p>Suncor's business code of conduct provides that Suncor shall in the conduct of its business (a) avoid all practices and activities that are a violation of any provision of competition law, and (b) support and encourage the maintenance of a competitive economy.</p>	
<b>GRI 300: TOPIC SPECIFIC STANDARDS – ENVIRONMENTAL</b>			
<b>GRI 302: Energy 2016</b>			
302-1	Energy consumption within the organization	<p><a href="#">Performance data</a> (p. 145)</p> <p>Suncor's 2019 CDP Climate Change Response (C8)</p>	7, 8
302-2	Energy consumption outside of the organization	<p><a href="#">Performance data</a> (p. 145)</p> <p>Suncor's 2019 CDP Climate Change Response (C8)</p>	8
302-3	Energy intensity	<p><a href="#">Performance data</a> (p. 145)</p> <p>Suncor's 2019 CDP Climate Change Response (C8)</p>	8, 9
302-4	Reduction of energy consumption	<a href="#">Performance data</a> (p. 145)	8, 9
<b>GRI 303: Water 2016</b>			
303-1	Water withdrawal by source	<a href="#">Performance data</a> (p. 145)	7, 8
303-2	Water sources significantly affected by withdrawal of water	<p><a href="#">Performance data</a> (p. 145)</p> <p><a href="#">Water performance and stewardship</a> (p. 85)</p> <p>Suncor's 2019 CDP Water Response (W1)</p>	8, 9
303-3	Water recycled and reused	<p><a href="#">Performance data</a> (p. 145)</p> <p><a href="#">Water performance and stewardship</a> (p. 85)</p>	8
<b>GRI 304: Biodiversity 2016</b>			
304-1	Operational sites in proximity to protected areas and areas of high biodiversity value outside protected areas	<p><a href="#">Performance data</a> (p. 145)</p> <p><a href="#">Biodiversity</a> (p. 97)</p>	8
304-2	Significant impacts of activities, products, and services on biodiversity	<p><a href="#">Performance data</a> (p. 145)</p> <p><a href="#">Biodiversity</a> (p. 97)</p>	8
304-3	Habitats protected or restored	<p><a href="#">Performance data</a> (p. 145)</p> <p><a href="#">Land and reclamation</a> (p. 92)</p>	8

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
<b>GRI 305: Emissions 2016</b>			
305-1	Direct (Scope 1) GHG emissions	<a href="#">Performance data</a> (p. 145) Suncor's 2019 CDP Climate Change Response (C6)	7, 8, 9
305-2	Energy indirect (Scope 2) GHG emissions	<a href="#">Performance data</a> (p. 145) Suncor's 2019 CDP Climate Change Response (C6)	7, 8, 9
305-3	Other indirect (Scope 3) GHG emissions	<a href="#">Performance data</a> (p. 145) Suncor's 2019 CDP Climate Change Response (C6)	7, 8
305-4	GHG emissions intensity	<a href="#">Performance data</a> (p. 145) Suncor's 2019 CDP Climate Change Response (C6)	7, 8, 9
305-5	Reduction of GHG emissions	<a href="#">Performance data</a> (p. 145)	7, 8, 9
305-7	Nitrogen oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), and other significant air emissions	<a href="#">Performance data</a> (p. 145) <a href="#">Air quality</a> (p. 82)	7, 8
<b>GRI 306: Effluents and waste 2016</b>			
306-1	Water discharge by quality and destination	<a href="#">Performance data</a> (p. 145) Water effluent quality is monitored and reported on. Unplanned water discharges are rare. We currently report the number of unplanned water discharge events as well as exceedances in our discharge water quality.	8
306-2	Waste by type and disposal method	<a href="#">Performance data</a> (p. 145)	8
306-3	Significant spills	<a href="#">Performance data</a> (p. 145)	8
306-5	Water bodies affected by water discharges and/or runoff	<a href="#">Biodiversity</a> (p. 97) <a href="#">Tailings management</a> (p. 88) <a href="#">Water performance and stewardship</a> (p. 85)	
<b>GRI 307: Environmental compliance 2016</b>			
307-1	Non-compliance with environmental laws and regulations	<a href="#">Performance data</a> (p. 145)	8
<b>GRI 400: TOPIC SPECIFIC STANDARDS – SOCIAL</b>			
<b>GRI 403: Occupational health and safety 2016</b>			
403-1	Workers representation in formal joint management-worker health and safety committees	Suncor's workforce at Oil Sands, In Situ, Exploration & Production and Refining & Marketing that include operations are represented in formal joint management-worker health and safety committees. These committees address health and safety concerns and provide guidance on required next steps.	1, 3
403-2	Types and rates of injury and number of work-related fatalities	<a href="#">Personal and process safety</a> (p. 41) <a href="#">Performance data</a> (p. 145)	1

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GRI Standards	Description	Response, link or additional information	UNGC principle(s)
<b>GRI 405: Diversity and equal opportunity 2016</b>			
405-1	Diversity of governance bodies and employees	<a href="#">Inclusion and diversity</a> (p. 46) <a href="#">Performance data</a> (p. 145)	
405-2	Ratio of basic salary and remuneration of women to men	<a href="#">Performance data</a> (p. 145)	1, 6
<b>GRI 411: Rights of Indigenous peoples 2016</b>			
411-1	Incidents of violations involving rights of indigenous peoples	In 2018, Suncor did not have any formal grievances reported in regard to incidents of violations involving Indigenous Peoples. Suncor works with Indigenous communities to address issues and concerns related to the environmental and social impacts associated with our operations.	1, 2
<b>GRI 413: Local communities 2016</b>			
413-1	Operations with local community engagement, impact assessments and development programs	<a href="#">Stakeholder and Indigenous engagement</a> (p. 104) <a href="#">Partnering with Indigenous businesses</a> (p. 120)	
<b>GRI 415: Public policy 2016</b>			
415-1	Political contributions	<a href="#">Lobbying and disclosure</a> (p. 32)	10
<b>GRI 419: Socioeconomic compliance 2016</b>			
419-1	Non-compliance with laws and regulations in the social and economic area	No material fines or non-monetary sanctions were levied on Suncor in 2018 for non-compliance with laws and regulations.	
<b>GRI SECTOR SPECIFIC DISCLOSURES</b>			
<b>Oil and Gas Sector Specific Disclosures</b>			
OG1	Volume and type of estimated proved reserves and production	<a href="#">Performance data</a> (p. 145)	
OG2	Renewable energy investment	<a href="#">Renewables</a> (p. 19)	8, 9
OG3	Renewable energy generation	<a href="#">Performance data</a> (p. 145)	8, 9
OG4	Biodiversity assessment and monitoring	<a href="#">Biodiversity</a> (p. 97)	
OG5	Formation or produced water	<a href="#">Performance data</a> (p. 145)	
OG6	Flaring and venting	<a href="#">Air quality</a> (p. 82) 2019 CDP Climate Change Response (C7) We do not report vented gas. Our operational practices help to limit venting, such as vapour recovery units that are used on some of our storage tanks. All our tanks comply with Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks, CCME, PN1180, as amended or Alberta Energy Regulator Directive 055, where applicable.	
OG7	Drilling waste	<a href="#">Performance data</a> (p. 145)	
OG8	Fuel content	<a href="#">Performance data</a> (p. 145)	
OG13	Process safety events	<a href="#">Personal and process safety</a> (p. 41)	

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## SASB TABLE

New this year, we've included a table available for download containing topics and issues identified by the [Sustainability Accounting Standards Board](#) (SASB) as the most relevant to long-term value creation for the industry we operate in. We value disclosure as a foundational activity for investor engagement and support efforts which seek to drive consistency and comparability of sustainability performance data. Due to the integrated nature of our business, we've elected to refer to several SASB Standards including Metals and Mining, Oil & Gas – Exploration & Production, and Oil & Gas – Refining & Marketing. Any values that are classified within the Midstream categorization will be included within the Refining & Marketing section. We'll continue to evaluate additional SASB metrics for potential disclosure in future reports. Some responses will contain a page number/section that relates to specific content within the 2019 Report on Sustainability which will supply useful information in gathering a full understanding of the company.

SASB Code	Description	Response, link or additional information
<b>Greenhouse Gas Emissions</b>		
<b>EM-EP-110a.1</b>	(1) Gross global Scope 1 emissions	20,576,955 tonnes CO <sub>2</sub> e
<b>EM-RM-110a.1</b>	(2) Percentage methane	2%
<b>EM-MM-110a.1</b>	(3) Percentage covered under emission-limiting regulations	0%
		No emission-limiting regulations were imposed in 2018. Provincial and federal methane regulations are effective in 2019.
		Additional information:
		<ul style="list-style-type: none"> <li>• Suncor 2019 CDP Climate Change Response (C7)</li> </ul>
<b>EM-EP-110a.2</b>	Breakdown of gross global Scope 1 emissions:	
	(1) flared hydrocarbons	551,147 tonnes CO <sub>2</sub> e
	(2) other combustion	16,689,685 tonnes CO <sub>2</sub> e
	(3) process emissions	1,498,740 tonnes CO <sub>2</sub> e
	(4) other vented emissions	9,391 tonnes CO <sub>2</sub> e
	(5) fugitive emissions	386,532 tonnes CO <sub>2</sub> e
<b>EM-EP-110a.3</b> <b>EM-RM-110a.2</b> <b>EM-MM-110a.2</b>	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Additional information: <ul style="list-style-type: none"> <li>• 2019 Report on Sustainability (<a href="#">sustainability goals</a>, p. 15)</li> <li>• <a href="#">2019 Climate Risk and Resilience</a> (p. 20, business strategy for a changing energy future)</li> <li>• Suncor 2019 CDP Climate Change Response (C7)</li> </ul>
<b>Air Quality</b>		
<b>EM-EP-120a.1</b> <b>EM-RM-120a.1</b> <b>EM-MM-120a.1</b>	Air emissions profile:	Additional information: <ul style="list-style-type: none"> <li>• 2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> <li>• <a href="#">Canadian National Pollutant Release Inventory (NPRI)</a></li> <li>• <a href="#">US Toxic Release Inventory</a></li> </ul>
<b>EM-RM-120a.2</b>	Number of refineries in or near areas of dense populations	Suncor operates four refineries in Edmonton (AB), Sarnia (ON), Montreal (QC) and Commerce City Colorado (USA).

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<b>EM-MM-130a.1</b>	(1) Total energy consumed	340,000,000 GJ
	(2) Percentage grid electricity	1.47%
	(3) Percentage renewable	0.59%
		Additional information:
		<ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> <li>Suncor 2019 CDP Climate Change Response (C8)</li> </ul>
<b>Water Management</b>		
<b>EM-EP-140a.1</b>	(1) Total fresh water withdrawn	115,335 megaliters/yr
<b>EM-RM-140a.1</b>	(2) Total fresh water consumed	61,672 megaliters/yr
<b>EM-MM-140a.1</b>	(3) Percentage recycled	We calculate site specific average annual water recycling rate.
	(4) Percentage of each in regions with High or Extremely High Baseline Water Stress Management	We do not currently operate in water stressed areas. Additional information on water stress management and water related risks in the CDP water response.
		Additional information:
		<ul style="list-style-type: none"> <li><a href="#">Suncor's 2019 CDP Water Response</a> (W1)</li> </ul>
<b>EM-EP-140a.2</b>	(1) Volume of produced water and flow back generated	42,285 thousand m <sup>3</sup>
	(2) Water discharged (%)	Not reported at this time
	(3) Water injected (%)	Not reported at this time
	(4) Water recycled (%)	Not reported at this time
		Additional information:
		<ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">water performance and stewardship</a>, p. 85)</li> <li>Suncor's 2019 CDP Water Response (W1)</li> </ul>
<b>EM-MM-140a.2</b>	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	There were no incidents of non-compliance associated with water quality permits, standards and regulations in 2018.
<b>EM-RM-140a.2</b>		
		Additional information:
		<ul style="list-style-type: none"> <li><a href="#">Suncor's 2019 CDP Water Response</a> (W2)</li> </ul>
<b>Waste &amp; Hazardous Materials Management</b>		
<b>EM-MM-150a.1</b>	Total weight of tailings waste, percentage recycled	2019 Report on Sustainability ( <a href="#">tailings management</a> , p. 88)
<b>EM-RM-150a.1</b>	Amount of hazardous waste generated and percentage recycled	Suncor's Downstream, Refining and Supply business segment generated 1,016,600 tonnes of hazardous waste in 2018. Approximately 5% of this waste was recycled, recovered or re-used.
		Additional information:
		<ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>

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SASB Code	Description	Response, link or additional information
<b>Biodiversity Impacts</b>		
<b>EM-EP-160a.1</b> <b>EM-MM-160a.1</b>	Description of environmental management policies and practices for active sites	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">risk management</a>, p. 25; <a href="#">biodiversity</a>, p. 97)</li> <li>Suncor's <a href="#">Environment, Health and Safety Policy</a></li> </ul>
<b>EM-EP-160a.2</b> <b>EM-MM-160a.4</b>	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume impacting shorelines with ESI rankings 8–10, and volume recovered	There were 0 significant spills in 2018. Significant spills reflect unplanned or accidental release of material whose impact off property takes longer than 7 months to remediate, or on property one year or more to remediate or reclaim. These could be into the environment or into a location that does not usually contain the material, as specified by geographical regulation. <p>Additional information:</p> <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>
<b>EM-EP-160a.3</b> <b>EM-MM-160a.3</b>	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Approximately 50% of Suncor's oil sands lease areas are within or near caribou range boundaries as identified within the Recovery Strategy for the Woodland Caribou, Boreal population ( <i>Rangifer tarandus caribou</i> ), in Canada (2012). <p>The determination considers that the oil sands comprise 96.2% of the total hydrocarbon reserves in FY 2018 and includes two assumptions.</p> <ol style="list-style-type: none"> <li>Although boreal caribou range does not strictly meet the considerations described for areas of protected conservation status or endangered species habitat, they should be considered here based on the boreal population of woodland caribou being listed as threatened under Canada's Species at Risk Act (SARA).</li> <li>Proven and probable reserves are distributed evenly across oil sands lease holdings determined to be within or near surface expression of caribou range boundaries.</li> </ol>
<b>Security, Human Rights &amp; Rights of Indigenous Peoples</b>		
<b>EM-EP-210a.3</b> <b>EM-MM-210a.3</b>	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">stakeholder and Indigenous relations</a>, p. 104)</li> <li>Suncor's <a href="#">Canadian Aboriginal Rights Policy</a></li> <li>Suncor's <a href="#">Human Rights Policy</a></li> </ul>
<b>Community Relations</b>		
<b>EM-EP-210b.1</b> <b>EM-MM-210b.1</b>	Discussion of process to manage risks and opportunities associated with community rights and interests	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">stakeholder and Indigenous relations</a>, p. 104)</li> </ul>

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SASB Code	Description	Response, link or additional information
<b>Labor Relations</b>		
<b>EM-MM-310a.1</b>	Percentage of active workforce covered under collective-bargaining agreements, broken down by U.S. and foreign employees	33.2% of our workforce is unionized.  Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>
<b>EM-MM-310a.2</b>	Number and duration of strikes and lockouts	No work-stoppages occurred in the reporting year due to strikes or lockouts.
<b>Workforce Health &amp; Safety</b>		
<b>EM-EP-320a.1</b> <b>EM-RM-320a.1</b> <b>EM-MM-320a.1</b>	(1) Total recordable incident rate (TRIR)	2018 TRIR (employees): 0.3 2018 TRIR (contractors): 0.41
	(2) fatality rate	0
	(3) near miss frequency rate (NMFR)	Not reported at this time
	(4) average hours of health, safety, and emergency response training for (a) full-time, (b) contract, and (c) short-service employees	Not reported at this time
		Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">personal and process safety</a>, p. 41)</li> </ul>
<b>EM-EP-320a.2</b> <b>EM-RM-320a.2</b>	Discussion of management systems used to integrate a culture of safety throughout the exploration and production lifecycle	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">personal and process safety</a>, p. 41)</li> <li>Suncor's <a href="#">Journey to Zero</a></li> </ul>
<b>Reserves Valuation &amp; Capital Expenditures</b>		
<b>EM-EP-420a.3</b>	Amount invested in renewable energy, revenue generated by renewable energy sales	The total capital invested in renewable energy was \$2 million CAD, with a total offset value of \$1 million CAD generated.  These figures reflect Suncor's tracking of wind offsets across its enterprise, and the subsequent value brought forth through GHG-offset related revenue.
<b>EM-EP-420a.4</b>	Discussion of how price and demand for hydrocarbons and/or climate regulation influences the capital expenditure strategy for exploration, acquisition, and development of assets	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">economic impact</a>, p. 37)</li> <li><a href="#">2019 Climate Risk and Resilience Report</a> (p. 20)</li> </ul>
<b>Business Ethics &amp; Transparency</b>		
<b>EM-EP-510a.2</b> <b>EM-MM-510a.1</b>	Description of the management system for prevention of corruption and bribery throughout the value chain	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">ethical business conduct</a>, p. 43; <a href="#">risk management</a>, p. 25)</li> <li>Suncor's <a href="#">Standards of Business Conduct</a></li> <li>Suncor's <a href="#">Supplier Code of Conduct</a></li> <li>Suncor's <a href="#">Prevention of Improper Payments</a> policy guidance &amp; standard</li> </ul>

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<b>EM-EP-530a.1</b>	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Additional information:
<b>EM-RM-530a.1</b>		<ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">policy engagement</a>, p. 27)</li> </ul>
<b>Activity Metrics</b>		
<b>EM-EP-000.A</b>	Production of: <ul style="list-style-type: none"> <li>(1) oil</li> <li>(2) natural gas</li> <li>(3) synthetic oil</li> <li>(4) synthetic gas</li> </ul>	Total upstream and downstream production in 2018 was 53.95 million m <sup>3</sup> Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>
<b>EM-EP-000.B</b>	Number of offshore sites	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">our operations</a>, p. 35)</li> </ul>
<b>EM-EP-000.C</b>	Number of terrestrial sites	Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">our operations</a>, p. 35)</li> </ul>
<b>EM-RM-000.A</b>	Refining throughput of crude oil and other feedstocks	Downstream (Refining & Supply) net production in 2018 was 26.92 million m <sup>3</sup> saleable yield/yr Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>
<b>EM-RM-000.B</b>	Refining operating capacity	Suncor operates four refineries. Operating capacities are in barrels-per-day: <ul style="list-style-type: none"> <li>Edmonton, Alta.: 142,000</li> <li>Montreal, Que.: 137,000</li> <li>Commerce City, Colo.: 98,000</li> <li>Sarnia, Ont.: 85,000</li> </ul>
<b>EM-MM-000.B</b>	(1) Total number of employees	12,626 total employees
	(2) Percentage contractors	4% of our workforce are long-term contractors
		Additional information: <ul style="list-style-type: none"> <li>2019 Report on Sustainability (<a href="#">performance data</a>, p. 145)</li> </ul>