Syncrude is one of the largest operators in Canada’s oil sands industry, with over 50 years of responsible operations and ongoing innovation.

Based in Fort McMurray, Alberta, Syncrude operates technologically-advanced oil sands mines, extraction and upgrading facilities, as well as utilities plants. A large research and development facility in Edmonton supports operations and has pioneered many of the technologies used today in the industry. Current production capacity is 350,000 barrels per day of high quality light sweet crude oil and cumulative shipments now exceed 2.6 billion barrels.

Indigenous plant species are grown for use in reclamation programs in areas that were previously mined.

ABOUT THIS REPORT This report is a highlights summary of the environmental, social and economic impacts of Syncrude’s operations during 2017. More information about the topics in this book can be found online at www.syncrude.ca.
Wetlands are a key component of our ongoing reclamation strategy. Pictured here, the reclaimed Sandhill Fen wetland research area.

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LEADER’S LETTER

People are the heart and soul of any organization. And at Syncrude, the determination, resolve and mindfulness of our people is forging the path to a truly sustainable company. Our journey began over 50 years ago with some of the greatest minds in the energy industry and their achievements helped pave the way for a dynamic, economically-viable Canadian oil sands industry.

Today, as we enter the next stage of our journey, our focus more than ever is to ensure our success in an increasingly competitive world. This will be realized through innovation in technology and thinking, through reliable and responsible operations, by working collaboratively with other industry members, and by addressing the expectations of our stakeholders and neighbouring communities.

While Syncrude has faced a number of challenges over the last few years, the remarkable tenacity and resiliency of our employees has helped us overcome these and we continue to make great progress on our commitments.

Looking back to 2017, for example, once we recovered from the March process event, we operated exceptionally well. Production averaged 340,000 barrels of Syncrude Sweet Premium per day, delivering about 4.6 million barrels above plan of our high quality product between August and December. Also, our commitment to a safe workplace in the year was reflected in our lowest-ever total recordable injury rate. These achievements highlight the amazing perseverance of Syncrude’s people and the tremendous potential in a stable and reliable operation.

On the environmental front, we surpassed our reclamation target by more than 200 per cent, planting over 400,000 tree and shrub seedlings and returning 215 hectares of land back to nature. Our tailings management technologies enabled the removal of over nine million cubic metres of fluid fine tailings from our settling facilities and their treatment for incorporation into reclamation sites. As well, we continued our measured approach toward developing a corporate climate change strategy which decreases our greenhouse gas emissions per barrel.

“Syncrude’s focus on sustainability touches every single aspect of our operation – from facilities and equipment to environmental performance to our relationships with stakeholders and neighbours.”
Syncrude also continues to work with local communities to identify opportunities that enable them to share in the benefits of our oil sands operation. In fact, at $342 million, Aboriginal procurement in 2017 was double that of the previous year, reaching a cumulative $3 billion. Aboriginal direct workforce representation increased to 10.1 per cent – one of the highest levels in our history – and people from the local region accounted for 90 per cent of all new hires.

Our commitment to innovation through research and development is improving current operations and helping ensure we can meet the challenges of the future. Syncrude is recognized as one of the top innovation leaders in Canada with over $1.1 billion in R&D investments between 2001 and 2015. We invested $74.5 million in 2017 alone and continue to partner with other industry players through Canada's Oil Sands Innovation Alliance (COSIA) to develop leading-edge technologies and solutions.

Syncrude’s focus on sustainability touches every single aspect of our operation – from facilities and equipment to environmental performance to our relationships with stakeholders and neighbours. And much like 50 years ago, when we began our long, proud and accomplished journey in the oil sands, we will rely on our people to deliver the competitive, world-class operations required throughout the next stage of our journey. Our Vision and Values continue to guide us and I’m confident we have the knowledge, heart and commitment to achieve Syncrude’s highest potential.

Doreen Cole
Managing Director
2017 HIGHLIGHTS

400,000
SEEDLINGS
PLANTED

OVER 100 PLANT & MOSS SPECIES
& PEAT-FORMING VEGETATION
SUPPORTED BY OUR RECLAIMED FEN WATERSHED

$6.2 MILLION
INVESTED IN
COMMUNITY PROJECTS
& INITIATIVES

87% OF ALL WATER USED WAS
RECYCLED FROM TAILINGS FACILITIES

90 PER CENT
OF ALL NEW EMPLOYEES
HIRED FROM LOCAL REGION

GHG EMISSIONS

0.11 TONNES CO₂e
PER BARREL PRODUCED

ABORIGINAL WORKFORCE
REPRESENTATION INCREASES TO
10.1%

2017 TOTAL PROCUREMENT

39% Municipality of Wood Buffalo
38% Rest of Alberta
10% Rest of Canada
8% Aboriginal-owned Companies
8% International
**LOWEST EVER**

Total recordable injury rate of **0.45**

**SO₂ Emissions**
Reduced more than 50 percent from 2013

**EMPLOYEES AND RETIREES**

Contribute over **9,800 volunteer hours**

**ABORIGINAL PROCUREMENT**

Doubles from previous year to **$342 million**

And over **$3 billion** cumulative to date

**OVER**

9 million M³ of fluid fine tails removed from tailings facilities and treated for future reclamation activities

**2017 TOTAL PROCUREMENT**

<table>
<thead>
<tr>
<th>%</th>
<th>Source</th>
</tr>
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<tbody>
<tr>
<td>39%</td>
<td>Municipality of Wood Buffalo</td>
</tr>
<tr>
<td>38%</td>
<td>Rest of Alberta</td>
</tr>
<tr>
<td>10%</td>
<td>Aboriginal-owned Companies</td>
</tr>
<tr>
<td>8%</td>
<td>Rest of Canada</td>
</tr>
<tr>
<td>5%</td>
<td>International</td>
</tr>
</tbody>
</table>

**215**

Hectares of land reclaimed
OUR SUSTAINABILITY APPROACH

We are guided by our corporate Vision and Values, which speak to how we operate and the principled and ethical approach toward achieving our goals. This is supported through internal systems such as our Code of Ethics and Business Conduct and our Stakeholder Relations Policy. External inputs, such as materiality risk analyses and community of interest feedback, provide perspectives on performance and direction on priorities.

REGULATORY OVERSIGHT AND ENVIRONMENTAL MONITORING

Environmental compliance is primarily governed by the Alberta Environmental Protection and Enhancement Act. Independent environmental monitoring is conducted through the Alberta Environment and Parks Science and Monitoring Division. Syncrude provides funding to support their activities.

TOWARDS SUSTAINABLE MINING PROGRAM

As a member of the Mining Association of Canada (MAC), Syncrude participates in its Towards Sustainable Mining (TSM) initiative. This program specifies measurement criteria in protocols for tailings management, energy and greenhouse gas emissions management, Aboriginal and community outreach, crisis management and communications planning, safety and health, and biodiversity conservation. Protocols are self-assessed using a bond rating (C, B, A, AA, AAA) and reported annually. Every three years, assessments are externally verified to ensure accuracy and transparency. Syncrude underwent an external verification for the 2016 reporting year and was confirmed to have high performance, and minimum Level A ratings, in all areas.

INDUSTRY BEST PRACTICES

Syncrude participates in a number of associations committed to responsible business. In addition to the Mining Association of Canada, these include the Canadian Association of Petroleum Producers (CAPP), Canadian Council for Aboriginal Business (CCAB), Canada’s Oil Sands Innovation Alliance (COSIA), Alberta Chamber of Resources (ACR), Indigenous Works and the Oil Sands Community Alliance (OSCA).

REPORTING ETHICAL CONCERNS

An external system is in place through EthicsPoint for the anonymous and confidential reporting of concerns about corporate conduct. This is available to employees, suppliers, communities of interest and other members of the public. Information on how to report is available internally to all staff and to the public at www.syncrude.ca. Of the 18 reports identified by EthicsPoint in 2017, none were substantiated upon investigation.

COMMUNITY ADVISORY PANELS

Syncrude conducts community advisory panels, facilitated by an independent consultant, in order to obtain feedback from diverse communities of interest regarding our operational performance and sustainability reporting. A panel in 2017 was comprised of individuals from the Fort McMurray #468 First Nation, Indspire, the Wood Buffalo Environmental Association, the Alberta Biodiversity Monitoring Institute, Emissions Reduction Alberta, the Edmonton Chamber of Commerce, Keyano College and the University of Alberta. Members of Syncrude’s executive leadership were also in attendance.

Overall, the 2017 panel was impressed with Syncrude’s commitment to sustainability monitoring and reporting. While each of the panelists noted they felt Syncrude was doing a very good job responding to many of its sustainability risks, several emphasized the amount of information provided in the reviewed sustainability report would challenge the average reader. Several panelists indicated that they had to invest a considerable amount of time to distill the key findings in the report. Panelists encouraged Syncrude to consider alternative ways to present information, including separate reports for different audiences. Several panelists noted that the report had a “corporate” rather than a “community” feel to it and recommended that Syncrude consider “who is being spoken to the most” in its sustainability reports. The majority of the panelists reported that after reading the report and participating on the panel, they were confident that Syncrude cares about the “triple bottom line.”
2017 CORPORATE PERFORMANCE SUMMARY

Land & Biodiversity
Return disturbed land to equivalent ecosystem capability, while meeting evolving expectations, standards and regulations to support biodiversity.

2017 GOALS
• Reclamation target of 98 hectares
• Monitor reclamation progress and ecosystem impacts
• Minimize occurrences of avian species in tailings areas

2017 RESULTS
• 215 hectares reclaimed and over 400,000 seedlings planted
• Over 1,500 birds captured and released at eight monitoring stations on reclaimed and undisturbed sites
• 14 mammal species observed on reclaimed mine areas
• Reclaimed fen watershed supporting peat-forming vegetation and over 100 plant and moss species
• 49 avian mortalities recorded due to oiling

ONGOING ACTIONS
• 2018 reclamation target of 121 hectares
• Double cumulative land reclaimed between 2016 and 2025
• Achieve a minimum Level A rating in Towards Sustainable Mining (TSM) Biodiversity Conservation Management Protocol

Tailings
Ability to remediate tailings and address shared business and stakeholder interests.

2017 GOALS
• Meet or exceed Alberta regulatory requirements regarding new and legacy fluid fine tailings (FFT)
• Implement and ensure operational reliability of new technologies to manage and reclaim FFT
• Demonstrate successful treatment of tailings into material suitable for reclamation

2017 RESULTS
• Over 9 million m³ of FFT removed from tailings facilities and treated for future reclamation activities
• Landform construction and reclamation of 192-hectare area using composite tailings FFT treatment technology underway in former East Mine

ONGOING ACTIONS
• Manage volumes of FFT through research, development and implementation of new technologies
• Continued collaborative research through COSIA and other key partners
• Understand impacts and respond to regulatory requirements for tailings management
• Achieve a minimum Level A performance in Towards Sustainable Mining (TSM) Tailings Management Protocol
**Water**

Responsible resource management that enables continued access to and protection of regional water resources.

**2017 GOALS**

- Achieve water use reduction of 4 million m³ between 2014 and 2017
- Develop broad water strategy to address operational risks, regulatory requirements and stakeholder expectations

**2017 RESULTS**

- Water use similar to previous five years; withdrawal of 36.4 million m³ from Athabasca River; 2.5 barrels water used per barrel crude oil produced
- 87 per cent of water used recycled from tailings facilities
- Water strategy developed

**ONGOING ACTIONS**

- Target 30 per cent reduction in fresh water use to 1.8 barrels per barrel of product by 2021
- Integrate water strategy into operations stewardship and accountability
- Continue to research viable treatment technologies for water re-use and safe release to environment, including collaboration within Canada’s Oil Sands Innovation Alliance (COSIA)
- Support and fund science-based water quality monitoring

**Climate Change**

Meet society’s energy demands while responding to expectations regarding climate change action.

**2017 GOALS**

- Develop corporate greenhouse gas emissions (GHG) strategy, including short- and long-term opportunities for improving energy efficiency and reducing GHGs per barrel
- Respond to and meet evolving climate change related regulatory requirements and provincial carbon targets

**2017 RESULTS**

- GHG emissions unchanged over last five years, at 0.11 tonnes CO₂e per barrel produced
- GHG strategy being developed for roll-out to operations in 2019
- $58 million paid under the Government of Alberta’s Carbon Competitiveness Incentive Regulation

**ONGOING ACTIONS**

- Implement corporate GHG strategy
- Continue efforts to improve reliability and energy efficiency of operations
- Evaluate opportunities for collaboration within Canada’s Oil Sands Innovation Alliance
- Achieve a minimum Level A performance in Towards Sustainable Mining (TSM) Energy and GHG Emissions Management Protocol
**Aboriginal Relations**
Ensure local Aboriginal communities share in the opportunities created from our operations.

**2017 GOALS**
- Identify procurement opportunities for Aboriginal businesses
- Recruit and retain qualified Aboriginal employees
- Investments in health, education, culture and quality-of-life initiatives
- Greater incorporation of Traditional Environmental Knowledge (TEK) into reclamation activities
- Consult and establish agreements with directly-affected local Aboriginal communities on Mildred Lake Extension (MLX) project

**2017 RESULTS**
- Aboriginal procurement doubles from previous year to $342 million and over $3 billion cumulative to date
- Increase in Aboriginal workforce representation to 10.1%
- $1 million invested in Aboriginal-focused projects and initiatives
- Successful first year of new TEK-focused Reclamation Engagement Focus Group
- Four agreements secured with surrounding communities

**ONGOING ACTIONS**
- Continue focus on six key commitment areas of our Aboriginal Relations program: Corporate Leadership, Employment, Business Development, Education, Community Development, and Environment
- Continue consultation on MLX, address statements of concern, identify further agreement opportunities, and incorporate Traditional Land Use studies and Traditional Environmental Knowledge
- Achieve a minimum Level A performance in Towards Sustainable Mining (TSM) Aboriginal and Community Outreach Protocol

**Regulatory & Government**
Understand and meet expectations and requirements impacting development.

**2017 GOALS**
- Continue active engagement on policy and regulatory issues affecting operations and future development
- Continue regulatory and consultation activities on proposed (Mildred Lake Extension) MLX project

**2017 RESULTS**
- 82 formal consultation meetings held with First Nations and Métis Locals
- Responses issued for Statements of Concern (SOCs) related to MLX
- Continued engagement on Canadian Environmental Assessment Act review and other proposed federal regulatory changes

**ONGOING ACTIONS**
- Continued regulatory and consultation activities on proposed MLX project
- Continued focus on meeting regulatory expectations for reclamation plans, tailings management and water return
- Monitor and assess impact of changes to Canadian Environmental Protection Act, implementation of Pan-Canadian Framework on Clean Growth and Climate Change, and other provincial and federal regulatory changes
- Continued policy input through engagement on key industry associations
For Audrey Lanoue, reclamation isn’t just about meeting regulatory requirements, it’s about achieving vibrant ecosystems that integrate with surrounding habitat by harnessing the knowledge of the brightest scientific minds. That’s why experts from Syncrude work together with leading university researchers to return mined land back to nature.

Audrey’s journey with Syncrude began in 1997, collecting soil samples in reclaimed areas as a summer student – and she can’t believe how far things have come. “Areas that were reclaimed when I started working at Syncrude are now hard to distinguish from the surrounding landscape.”

Today, Audrey is the leader of the Mine Closure Research Team. “Historically, we have had two teams working on Mine Closure research, one focused on tailings and the other on reclamation and water,” she says. The new Mine Closure Research team integrates tailings technology, reclamation and water research into a single team. “We know that tailings, landforms, soil, vegetation, and wildlife are all connected by water. With a team of experts across all these areas we are better positioned to address the challenges and opportunities of mine closure.”

**LAND**

**OUR PERFORMANCE**

- Over 3,800 hectares of former mine areas now reclaimed
- 8.5 million tree and shrub seedlings planted to date
- Reclaimed fen watershed supporting peat-forming vegetation and over 100 plant and moss species

**OUR APPROACH**

Our long-term vision is to create a landscape that sustains a healthy diversity of plants and animals, and supports a range of land uses. Our goals are to ensure the final reclaimed landscape has capability equivalent to that existing prior to development, is integrated with the surrounding area, establishes boreal forest upland and lowland communities, yields water suitable for return to the natural environment, and is planned in direct consultation with local, directly affected stakeholders and Aboriginal communities of interest.
MEETING REGULATORY COMMITMENTS

Syncrude stewards to the expectations of the Alberta Environmental Protection and Enhancement Act, which requires us to return the land we use to a productive capability equivalent to that of the pre-disturbance landscape. A mine closure plan is submitted to the government every ten years, with a mid-term update; a mine reclamation plan is submitted every three years, supplemented with annual progress reports. Each of the Syncrude Joint Venture Participants is liable for its share of financial security regarding the operation’s closure obligation.

ONGOING RECLAMATION ACTIVITIES

Syncrude is targeting to double our cumulative reclaimed land between 2016 and 2025. We have to date reclaimed over 3,800 hectares of land and planted around 8.5 million trees and shrubs. We reclaimed 215 hectares in 2017 – more than double our target – and planted over 400,000 seedlings, which included seven species of trees and eight species of shrubs. We expect to reclaim a further 121 hectares of land in 2018.

EAST MINE RECLAMATION

Reclamation of our former East Mine is ongoing. This area is approximately 11.5 km² in size and bordered by Highway 63 south of our main plant site. Reclamation began in 2000 using composite tails as the landform substrate, or underlying layer.

Construction of the 57-hectare Sandhill Fen research watershed was completed in 2012 and results to date are surpassing expectations. After six growing seasons, the plant community continues to develop and plant health is comparable to that found on a natural site. A 2015 vegetation diversity
study showed that almost half of the wetland area is characterized by peat-forming species, and there are over 100 plant and 23 moss species. As well, a wide variety of wildlife is inhabiting the watershed, including rodents, bats, frogs, insects and birds.

We are also actively reclaiming a further 192 hectares in the former East Mine. This includes the 85-hectare Kingfisher area immediately adjacent to the Sandhill Fen. Reclamation and revegetation of the remainder of the mine continues and is expected to be complete by 2025.

WEST MINE RECLAMATION
Our former West Mine, under reclamation using the method of capping fluid fine tails with water, continues to be monitored as it evolves towards a fully functional, healthy aquatic ecosystem. Further discussion can be found in the Tailings chapter.

RECLAMATION RESEARCH
Syncrude invested $74.5 million on research and development efforts in 2017; of this, over half was directed to environmental projects such as our reclamation research programs and collaborative efforts through Canada’s Oil Sands Innovation Alliance (COSIA).

We also provide financial grants to Canadian and U.S. universities to assist us in advancing oil sands reclamation science. Among those are the NSERC (Natural Sciences and Engineering Research Council of Canada)/Syncrude Industrial Research Chair in Mine Closure Geochemistry at the University of Saskatchewan and the NSERC/Syncrude Industrial Research Chair in Hydrogeological Characterization of Oil Sands Mine Closure Landforms at the University of Saskatchewan.
BIODIVERSITY

HIGHLIGHTS
• Over 1,500 birds representing 50-plus species observed at monitoring stations on reclaimed and adjacent natural areas
• 14 mammal species observed on reclaimed mine areas
• Biodiversity management system earns best-in-class rating from Towards Sustainable Mining program

OUR APPROACH
Our environmental programs and initiatives reflect an awareness of the value of biodiversity. Through these, we work to ensure our actions today do not have a long-term permanent impact on local ecosystems. Through our reclamation activities, we re-establish native vegetation and wildlife habitats similar to those that existed prior to disturbance of the area.

As a member of the Mining Association of Canada, we endorse the principles of its Towards Sustainable Mining initiative. This includes a protocol on biodiversity conservation management. A third-party verification of our system in 2017 rated Syncrude at AAA, or best-in-class, noting demonstrated senior management commitment and external collaboration.

WILDLIFE AND WATERFOWL PROTECTION STRATEGIES
Syncrude operates within a large wilderness area in northern Alberta’s boreal forest and employs a number of strategies to deter wildlife from our sites. These include our waterfowl and bird deterrent system, and protocols for the handling of food and food waste.

In 2017, we experienced 49 bird and waterfowl mortalities due to oiling. Thirty-two additional losses, as well as 13 non-avian, were recorded related to natural or unknown causes. We are required by law to report to regulators sightings and wildlife incidents occurring on our site. In situations where distressed wildlife is found, the animal is assessed and action is taken under the guidance of Fish and Wildlife officials from Alberta Environment and Parks.
WILDLIFE MONITORING

It is important to demonstrate that our land reclamation practices are creating productive habitats for local species to return. Wildlife monitoring activities include the Institute for Bird Populations’ Monitoring Avian Productivity and Survivorship (MAPS). Through this continent-wide bird banding program, researchers effectively monitor bird reproduction, survivorship and habitat use of reclaimed, disturbed and natural sites. Information collected contributes to a large database that is managed by the institute.

During the 2017 MAPS program, about 1,500 birds were captured and released at eight stations, including approximately 1,100 birds of 51 species at six stations located on reclaimed land. Since the program began in 2011, 143 species have been detected on our reclaimed areas, including 29 species of concern. Automated audio and ultrasonic recordings collected over the years also add to the evidence that wildlife is returning to reclaimed areas. These have recorded the calls of boreal chorus frogs, wood frogs and Canadian toads, as well as those of silver-haired, hoary, northern long-eared, little brown and red bats.

Stations equipped with motion-detection cameras recorded the presence of 14 mammal species on our reclamation areas in 2017. Over the years, we’ve observed an abundance of wildlife including coyote, black bear, gray wolf, Canada lynx, moose, fisher, mink, muskrat, white-tailed and mule deer, red fox, snowshoe hare, red squirrel, American marten, weasel, northern river otter, beaver and raccoon. Monitoring continues.

WILDLIFE INCIDENTS

1 Includes all bird and waterfowl mortalities related to oiling. Incidents are reported to the Alberta Government Environment and Parks department. An additional 32 mortalities were reported related to natural or unknown causes.

2 Includes all animal mortalities, regardless of cause, including those in which the cause was natural, due to predation or unknown.
Syncrude recognizes the value of multi-stakeholder approaches to monitor and mitigate industry impacts on the environment and, in 2018, joined the governments of Alberta and Canada, the Nature Conservancy of Canada and the Tallcree First Nation to create the world’s largest protected area of boreal forest.

Syncrude contributed $2.3 million to the Nature Conservancy of Canada, which then purchased a timber quota held by the Tallcree First Nation. This enabled the quota to be cancelled by the Government of Alberta, which then created the Birch River Wildland Provincial Park, a conservation area of 3,300 km². This new area sits next to Wood Buffalo National Park as well as several new and existing provincial parks. Taken together, the parks form a protected boreal forest area of more than 67,000 km², an area roughly twice as large as Vancouver Island. It protects key habitat for 68 species of conservation concern and three species at risk – wood bison, woodland caribou and the peregrine falcon.

Syncrude’s investment provides a land disturbance offset for future mining development, such as our proposed Mildred Lake Extension (MLX) Project, in addition to other commitments to mitigate and reduce our environmental impacts. The MLX Project is currently undergoing regulatory review with a hearing scheduled for early 2019.
FINDING A BETTER WAY

The Beaver Creek Wood Bison Ranch, a partnership between Syncrude and the Fort McKay First Nation, was established on reclaimed land in 1993. In 2018, it celebrates 25 years of operation.

WOOD BISON
The Beaver Creek Wood Bison Ranch is home to around 300 animals grazing on land reclaimed from mining operations.

A SUSTAINABLE LANDSCAPE
We have reclaimed over 3,800 hectares to date and planted around 8.5 million tree and shrub seedlings.

RECLAMATION SCIENCE
We invested $74.5 million on research and development in 2017, of which over half was focused on environmental and reclamation programs.

WILDLIFE MONITORING
Since monitoring began in 2011, 143 species of birds have been detected on our reclaimed areas.

CONTRIBUTING TO SPECIES AND CULTURAL PRESERVATION
FINDING A BETTER WAY

After six growing seasons, the Sandhill Fen research watershed has seen the growth of 100 plant and 23 moss species. A wide variety of wildlife is inhabiting the watershed, including rodents, bats, frogs, insects and birds.

NATURAL SOURCES
More than 9.9 million m$^3$ of surface soil, peat and subsoil material were salvaged in 2017 for use in reclamation, with LFH (leaf litter/fibric/humic, or the top layer recovered from the forest floor) material being placed directly in new reclamation areas to promote the most productive propagule germination of the native seed bank. Currently, in total, we have stockpiled over 86 million m$^3$ of soil material to support ongoing reclamation activities.
TAILINGS

OUR PERFORMANCE
• Over 9 million m³ of fluid fine tailings (FFT) removed from settling facilities in 2017 and treated for future reclamation activities.
• Landform construction and reclamation of a 192-hectare area using composite tails (CT) underway
• Monitoring continues on industry’s first commercial-scale demonstration of end-pit lake technology

OUR APPROACH
Through the use of tailings facilities, we maintain a highly efficient water recycling process which reduces water withdrawal from the Athabasca River. In fact, about 85 per cent of our water needs are met through this process. However, the storage of tailings also creates a potential long-term liability because of the volume that must be managed before reclamation can occur.

Currently, our tailings management strategy comprises the use of three treatment technologies that make this material suitable for reclamation: centrifuged tails, composite tailings (CT) and water capping. We are also working with industry partners, academia and the scientific community to develop further technology solutions. These will enable Syncrude to meet government regulations and public expectations to responsibly manage this material.

REDUCING AND RECLAIMING TAILINGS
To reclaim tailings, we’ve invested over $3 billion in three main technologies:

Centrifuging
Centrifuge technology combines fluid fine tailings (FFT) with gypsum and flocculent, acting as process aids, in spinning vessels (centrifuges) to separate out the water from the FFT. This water is recovered and recycled back into plant operations, while the resulting dewatered clay material is used in reclamation and landform construction. In 2017, 7.34 million m³ of FFT was treated using centrifuge technology.

Composite Tailings
Composite Tailings (CT) technology combines FFT with gypsum and sand to create a mixture that is deposited in mined-out areas where the tailings release water and quickly settle. The area is then capped with sand and soil, enabling the development of landscapes that support forests and wetlands. In 2017, 1.68 million m³ of FFT was processed with CT technology.

CT placement has been used in the reclamation of our East Mine. Sand capping to establish closure drainage is ongoing, and the entire area is expected to be fully reclaimed by 2025. The 57-hectare Sandhill Fen wetland research project was constructed at the northwest end of this area. More information on reclamation of this former mine can be found in the Land chapter.
Water Capping
Water capping involves adding a layer of water over FFT to form an aquatic environment. Syncrude has invested over 30 years of research to study this end-pit lake technology, with the industry’s first commercial-scale demonstration now underway in our former West Mine pit.

Research and monitoring continues to study the area’s performance as it evolves into an aquatic ecosystem. Study areas include water quality, impacts of the underlying FFT layer, performance of the littoral (shallow shoreline) zone, interaction of biological communities, consolidation of the tailings, development of the shoreline, and the establishment of plants and insects.

Monitoring indicates that shoreline erosion and stability is occurring as expected. FFT consolidation is also as expected, with the water cap around 11 metres in depth as of the end of 2017. In addition, oxygen saturation in the water is increasing, water quality is improving, and naphthenic acids are decreasing. Skimming and shoreline cleaning are underway to address the presence of residual hydrocarbons. Waterfowl deterrents continue to be in place throughout this demonstration period.

TAILINGS TECHNOLOGY DEVELOPMENT
We are currently researching additional technologies that could be used to supplement existing tailings remediation methods. These include:

Accelerated Dewatering
This technology mixes FFT with an organic flocculent, which is then placed in deep deposits. Flocculent molecules wrap around the clay mineral particles in the FFT, forcing them to settle faster. Initial tests showed a reduction in FFT volume by 50 per cent in three to five years.

Overburden Mixing
This method mixes FFT with overburden to create a fully functional surface that can be walked or driven upon. A demonstration pilot plant operated in 2014 and 2015, with commercial deployment in 2016. Deposit monitoring continues and results so far support the use of this technology.

FFT Clay Treatment
As it consolidates, FFT releases water at a very slow rate due to the strong affinity between clay surfaces and water. Lab-scale demonstrations in our research centre however have successfully enlarged the size of the clay particles and treated them so they repel, instead of attract, water. This could potentially provide an additional method of tailings treatment and accelerate reclamation. A field trial is underway.

Collaborative Research Efforts
We operate one of the largest private sector research facilities in Western Canada and participate in Canada’s Oil Sands Innovation Alliance (COSIA). COSIA coordinates collaborative industry research and knowledge exchange among its members.
WATER

OUR PERFORMANCE
• 36.4 million m³ of fresh water used in plant operations
• 87% of all process water used recycled from tailings facilities
• Projects underway to reduce fresh water use to 1.8 barrels per barrel of production by 2021

OUR APPROACH
Water is essential to Syncrude’s operation and plays a key role in our production processes. However, we realize it is a resource that must be managed responsibly. Toward this, we aim to minimize the withdrawal of fresh water from the watershed, maximize reuse of process-affected water, and safely manage its storage. This includes taking steps to protect local water bodies, creeks and rivers, and to develop scientifically-sound treatment methods which will allow us to release water stored on our site safely back to the environment. To ensure credible, transparent and science-based regional environmental monitoring, Syncrude and industry fund the Joint Canada-Alberta Plan for Oil Sands Monitoring (JOSM) conducted by the federal and provincial governments.

OUR WATER SOURCES
The majority of our operation relies on recycled process water sourced from our tailings facilities. In fact, of the total water used in 2017, 87 per cent was recycled.

Our main source of fresh water is the Athabasca River, which provided approximately 13 per cent of our water needs in 2017. This water is used to cool upgrading processes, generate steam, and for potable consumption. Our water license permit allows withdrawal of 61.7 million cubic metres of fresh water from the river annually, of which we used 36.4 million in 2017. This is around 0.17 per cent of the river’s average flow and equivalent to about 15 hours for the year.

TOTAL ALBERTA WATER ALLOCATIONS
Source: Alberta Energy Regulator, 2016
WATER USE PERFORMANCE

In addition to the 36.4 million cubic metres of fresh water withdrawn from the Athabasca River, 1.1 million cubic metres of basal groundwater was also used in our operations.

For non-production purposes, 2.8 million cubic metres of fresh water was diverted from Beaver Creek Reservoir for the Base Mine Lake tailings reclamation demonstration project. To offset this diversion, we fund the Alberta Conservation Association’s work to protect and enhance the riparian zone and streambed of the Owl River, near Lac La Biche. The offset constitutes compensation, as per our Fisheries Act approval, for Harmful Alteration, Disruption or Destruction of fisheries habitat (known as HADD).

As per provincial regulation, precipitation and runoff that comes in contact with our mining area is collected and routed into our tailings recycle water system. Over the last few years, extensive efforts have been undertaken to return natural surface water and basal groundwater from our leases to the watershed. In 2017, approximately four million cubic metres of water was returned to the environment upon meeting water quality requirements.
**Toward Improved Water Efficiency**

In 2017, water use intensity was in line with the five year average of 2.5 barrels of fresh water per barrel of production. We are targeting an approximate 30 per cent reduction to reduce this to 1.8 barrels by 2021, which is aligned with the oil sands mining target set by members of Canada’s Oil Sands Innovation Alliance (COSIA).

Actions already underway that reduced 2017 river intake by one million cubic metres include using water from reverse osmosis units in our water treatment plant for Syncrude Emissions Reduction Project units, and recovering water from the condensate stripper in our hydrogen plant.

**Research Progresses on Treatment and Release**

We currently store all process-affected water on our site, however we recognize this is not a sustainable long-term practice. To expedite landscape restoration activities and improve overall environmental stewardship, the hydrology of the reclaimed landscape must be integrated with the surrounding environment. To address these challenges, Syncrude collaborates through COSIA and with academic institutions to research and develop appropriate water treatment technologies.

For example, Syncrude’s Research department has been conducting successful research on tailings water treatment using petroleum coke, a byproduct of our upgrading process. The treatment is similar to using a home water filter. The coke, which is almost pure carbon, acts as a filter that removes contaminants such as naphthenic acids. Field programs completed to date confirm the method produces water that safely supports aquatic life. A large pilot-scale plant has been constructed at the Mildred Lake Settling Basin to further assess treatment efficiency, and provide engineering design information for potential commercial-scale implementation.
CLIMATE CHANGE

OUR PERFORMANCE
• GHG intensity at 0.11 tonnes per barrel for 2017
• Strategy to reduce GHG emissions intensity under development
• Over $197 million in carbon payments to Alberta government to date

OUR APPROACH
Syncrude recognizes that our operations are a large source of greenhouse gas (GHG) emissions in Canada and we are prepared to add our efforts to those of other businesses and sectors toward addressing the risks of climate change. In our own operations, we aim to minimize GHGs through improvements in energy efficiency, process reliability, and reduced flaring and venting. We also contribute toward studies on improving quantification methods and engage on this issue through industry associations as well as directly with provincial and federal governments.

CLIMATE CHANGE STRATEGY
An executive-led steering committee is responsible for overseeing our climate change strategy and is stewarding our progress. The focus remains on projects that mitigate or reduce emissions through energy efficiency opportunities, reliability improvements, technology development and potential offsets. The strategy is being rolled out across our operations starting in 2019.

GHG MANAGEMENT AND ENERGY EFFICIENCY PERFORMANCE
Greenhouse gas emissions from Syncrude have remained relatively constant over the last five years. In 2017, our emissions were 11.34 million tonnes, or 0.11 tonnes CO₂-equivalent per barrel. We consumed approximately 9.23 GJ of energy per cubic metre of product.
Energy conservation is core to our business. In fact, extensive cogeneration processes are incorporated throughout our operation in order to recover waste heat for reuse. As a result, we do not use all the energy we produce and export excess electricity, included in our total GHG emissions calculation, to the Alberta grid.

Increased energy efficiency correlates directly to lower GHG emissions, and it also improves financial outcomes. As we continue to pursue the next generation of oil sands technologies and reliability improvements, energy efficiency remains a key factor when evaluating capital and maintenance projects. In fact, when evaluating capital spending, projects that have significant energy efficiency advantages are permitted a lower return on investment.
MEETING PROVINCIAL CARBON REGULATIONS

Alberta’s Carbon Competitiveness Incentive Regulation (CCIR), effective in 2018, is an output-based allocation (OBA) approach under which a price of $30 per tonne on carbon will be instituted, rising to $50 per tonne by 2022. OBA compliance targets will be set by comparing the emissions intensity performance within industrial sectors, under which Syncrude’s operation will be separated into oil sands mined bitumen and oil sands bitumen upgrading. These targets will be set relative to the distribution of benchmarked emission intensities, such as those of a top quartile. Development of the system has been in progress through the Alberta Climate Change Office (ACCO) and Syncrude has actively participated in consultations through the Canadian Association of Petroleum Producers (CAPP).

COLLABORATIVE RESEARCH SOLUTIONS

Through Canada’s Oil Sands Innovation Alliance (COSIA) we are collaborating on research to assess how water, energy and carbon are stored and travel within a reclaimed landscape as compared to natural undisturbed areas. This includes support of the Hydrology, Ecology and Disturbance (HEAD) program, a multi-year and multi-university research program focused on the role of climate on the landscape. Other COSIA partners are investigating the use of satellite technology to provide more accurate and frequent measurements of fugitive GHG emissions from tailings facilities and mine faces. Learnings will be shared with all COSIA members.
AIR

OUR PERFORMANCE
• SO₂ emissions reduced more than 50% from 2013
• 40 odour reports attributed to Syncrude operations
• Participating in efforts to improve air quality and reduce odours in the region

OUR APPROACH
We are committed to protecting good air quality in the region by staying within the emissions limits of our operating license. If we are aware of a plant upset that could cause odours or temporarily elevate emissions from our operation, our protocol is to inform local stakeholder communities of the situation and our efforts to resolve the issue.

SULPHUR DIOXIDE (SO₂) EMISSIONS
Emissions of sulphur dioxide (SO₂) have decreased significantly over the last few years due to the successful operation of the $1.6 billion emissions reduction units. While 2017 emissions were half of what they were in 2013, they were slightly higher than recent years. This was due mainly to flaring activity associated with the Plant 13-1 process event and the ensuing start-up activities.

NITROGEN OXIDE (NOₓ) EMISSIONS
Our primary goals with respect to minimizing NOₓ emissions are to move the maximum volume of material while consuming the least amount of fuel, and to have engines that continue to reduce emissions per litre of fuel consumed. This is achieved through capital turnover and the purchase of new haul trucks when equipment reaches end-of-life. We also focus on fuel quality, engine selection, operating and maintenance practices, mine plan efficiency and knowledge sharing activities.
VOLATILE ORGANIC COMPOUNDS (VOCS) AND FUGITIVE EMISSIONS

To reduce VOCs and fugitive emissions, we conduct annual inspections on our operating units to identify leaks and ensure timely repair. In 2014, the Government of Alberta set out standard procedures for quantifying fugitive emissions from mine faces and tailings facilities, and encouraged these procedures to also be used in sampling for other air quality indicators, such as VOCs. This, combined with the recently deployed LeakDAS system, provides a more accurate accounting of leak volumes and emissions measurement.

REGIONAL AIR QUALITY

Regional air quality is monitored independently by the Wood Buffalo Environmental Association (WBEA). Headquartered in Fort McMurray, this multi-stakeholder association operates the most integrated and intensive focus on air and terrestrial monitoring in any one area in Canada, with 27 continuous air monitoring stations, each measuring between two and 10 air quality parameters, and five portable stations throughout the region. The association is comprised of 36 members representing Aboriginal communities, government, industry operators and environmental non-government organizations. A senior Syncrude manager is the current president of its governance committee.

WBEA informs Syncrude immediately of any ambient air exceedences recorded at their stations in the region. This triggers a site-wide investigation into possible sources that may be contributing to elevated readings. If one is identified, procedures are implemented to minimize air quality impacts, which can include reducing production rates. A follow-up report is typically submitted to the Alberta Energy Regulator within seven days.

In 2017, WBEA registered 42 exceedences at its air monitoring stations, of which five indicated Syncrude operations may have been a source, based on meteorological conditions and plant performance.

WBEA also coordinates regional terrestrial and forest health monitoring, which has included a berry monitoring project with Elders of the Fort McKay First Nation, as well as an odour monitoring program. Joint oil sands monitoring also occurs by the federal and provincial governments, in cooperation with local Indigenous communities, and is funded by Syncrude and industry.

ODOURS

Syncrude is actively working with industry partners, the community of Fort McKay, the Alberta Energy Regulator (AER) and Alberta Department of Health to address ongoing local stakeholder concerns about regional odours. In 2017, there were 40 odour complaints related to Syncrude’s operation. This number also includes those which, although a source could not be verified, Syncrude could not be ruled out as a possible source due to meteorological conditions at the time.
FINDING A BETTER WAY

Syncrude environmental technologies related to tailings management, water use and reclamation are published and shared openly through technical journals, conferences and collaborative industry groups such as Canada’s Oil Sands Innovation Alliance (COSIA). As a COSIA member, Syncrude leads 12 Environmental Priority Area studies and 36 Joint Industry Projects.

TAILINGS MANAGEMENT
We have invested over $3 billion in technologies to responsibly manage fluid fine tailings (FFT) and meet government regulations.

FRESH WATER USE
We imported approximately 0.17 per cent of the average flow of the Athabasca River in 2017, equivalent to about 15 hours.

CARBON PAYMENTS
Syncrude has contributed close to $200 million in carbon payments to the Government of Alberta.

REGIONAL ODOURS
Syncrude is actively working with industry partners, the community of Fort McKay, the Alberta Energy Regulator and Alberta Health to address concerns about regional odours.
SOCIAL SUSTAINABILITY
For Mike Caldwell, it’s all about finding the right motivation. And there’s no doubt what that is for Mike: his family. After all, they’re the reason he goes to work in the morning and they’re what drive him to get home safe at end of the day.

“There’s no better feeling than having my boys run to the door to greet me as I get home from work,” says Mike.

As team lead, Mike always puts safety first. That’s why the first thing he does with each new pair of work gloves he gets—and he’s issued dozens every year—is grab a marker and write the names of his wife Jenn and two sons Jasper and Ryder on them.

“Having worked all over the Upgrading area has allowed me to gain a deep understanding and appreciation for what we do in the plant, as well as the various hazards associated with the work,” says Mike. “If writing on my gloves inspires even just one person to work safer, it will be worthwhile.”

HEALTH & SAFETY

OUR PERFORMANCE
- Achieved lowest-ever combined Total Recordable Injury Rate for employees and contractors in 2017
- Learnings shared from process safety event expected to help improve operations across industry
- Syncrude suppliers and departments awarded for safety excellence

OUR APPROACH
Syncrude’s Operations Integrity Management System (OIMS) engages all employees in the awareness, understanding and adoption of safety rules, procedures and standards, and enables them to identify and remove workplace hazards and risks that could cause injuries. Through OIMS, Syncrude’s goal is to create a workplace where “Nobody Gets Hurt” and “Everyone Stays Healthy”.

“Syncrude has a deep commitment to keeping everyone safe, so I try to do my part to always set a good example for my team.”
SAFETY & HEALTH PERFORMANCE

In 2017, Syncrude achieved two major safety milestones: a new record for lowest combined Total Recordable Injury Rate for employees and contractors, at 0.45; and a best ever Tier 1 and 2 Upgrader Process Safety Event rate, at 0.26.

These results are meaningful considering the challenges faced in 2017. In particular, we experienced a significant event (see below) with a fire in a naphtha hydrotreater unit that injured one employee and two contract workers. This also resulted in a considerable amount of non-routine work executed during the return-to-operations efforts, including the start-up of several units. Despite these challenges, there was a continued focus on proactively eliminating high potential incidents through increased awareness and education.

FOCUS ON PROCESS SAFETY

On March 14, 2017, the recycle line for our naphtha hydrotreater unit began to leak treated naphtha, resulting in a vapour cloud and pool of hydrocarbon. The vapour cloud expanded to hot equipment in a neighboring unit where it ignited, causing the pool to catch fire. One Syncrude employee suffered serious burns, two contract workers suffered the effects of exposure to the vapour and several workers suffered impact stress from the incident. Significant damage was caused to the unit and a major adjacent pipe rack.

An investigation into the event determined that water in the recycle naphtha line froze and expanded, causing the line to split. The company’s learnings were shared through Energy Safety Canada to help improve safety across the oil and gas industry.
Steps have been identified to help prevent similar incidents from occurring in the future. They include assessing all heat tracing circuits to identify those that should be classified as safety critical equipment; and increased focus on detection, reporting and reduction of freeze events.

AUDITS AND RECOGNITION
A Certificate of Recognition, or COR, is issued by Alberta Occupational Health & Safety to employers who have implemented a workplace health and safety management system that meets provincial standards. The COR is valid for a three-year period, with maintenance audits required for the years in between. Syncrude maintained its COR after an independent audit in 2015, with the next scheduled for 2018.

Syncrude participates in the Partners in Injury Reduction (PIR) program which encourages injury prevention and effective health, safety and disability management systems in the workplace. It is a voluntary joint effort by the Alberta Workers’ Compensation Board (WCB), Alberta Occupational Health & Safety, industry partners, safety associations, employers and labour groups. Due to the effectiveness of our systems, and as a participant in COR, PIR and the Partnership Audit Standard Equivalency (PASE), Syncrude in 2017 received a reduction of $702,000 on our annual WCB premiums.

SYNCRUDE SAFETY SYMPOSIUM
Each year, Syncrude hosts the Loss Prevention Leadership Symposium for our leaders and representatives of contractor companies. The symposium works to provide understanding of what pace-setting organizations do to achieve outstanding safety performance, share learnings and renew commitments to a loss-free workplace.

As part of the symposium, Syncrude awards suppliers and internal departments for outstanding safety performance and demonstrated leadership. Supplier awards were presented to Acden Bee Clean, Diversified Transportation, Finning Canada and Premay Equipment. Corporate awards were presented to Aurora Mining Dumps and Structures, Human Resources and Technical Operations Support.
ABORIGINAL RELATIONS

OUR PERFORMANCE
• Consultation continued on proposed mine extension project
• Aboriginal procurement doubles from previous year
• Highest level of workforce Aboriginal representation in 10 years

OUR APPROACH
Syncrude acknowledges we operate on the traditional lands of five First Nations and, since our earliest days, have worked to accommodate their interests, as well as those of the Métis Locals, wherever possible. We aim to build strong relationships and establish mutually beneficial formal agreements that mitigate concerns and provide shared value to affected communities. Toward this, the goals for our Aboriginal Relations program clearly define our engagement principles, with a focus on employment, business development, community-guided investment, effective engagement and consultation, and environmental programs.

RESPECTING THE RIGHTS OF INDIGENOUS PEOPLES
Syncrude supports the constitutional right of Indigenous people to be consulted as delegated by the Crown. Recognizing the importance of national reconciliation, we support implementing the principles of the United Nations Declaration on The Rights of Indigenous Peoples (UNDRIP) in a manner consistent with the Canadian Constitution and law, and will continue to monitor and seek further understanding on its application to our business.

ENGAGEMENT AND CONSULTATION ACTIVITIES
Syncrude continued to focus in 2017 on consultations regarding the proposed Mildred Lake Mine Extension (MLX) Project. Numerous meetings have occurred to address environmental concerns and negotiate Impact Benefit Agreements. Syncrude has to date secured four new agreements with surrounding communities. The Alberta Energy Regulator has set a hearing date for the project in early 2019. Consultation also occurred on other projects related to ongoing operations and lease development.

At the same time, we recognize local Aboriginal people continue to be concerned with holistic environmental commitments and we engage with them on matters such as end-land use, air quality and local operational updates. Syncrude completes this through various forums: operations tours; advisory committees; a Reclamation Engagement Focus Group; and committees established through the Air and Odour Improvement Program for Fort McKay.
TOP-TIER ACCREDITATION WITH THE PROGRESSIVE ABORIGINAL RELATIONS PROGRAM

Syncrude has been certified six times at the Gold Level of the Progressive Aboriginal Relations program of the Canadian Council for Aboriginal Business. Syncrude is one of 16 companies who have attained this level – and one of two in the oil sands – which recognizes our work to create opportunities for Aboriginal businesses, employ Aboriginal people, and engage with Aboriginal communities.

ABORIGINAL BUSINESS PROCUREMENT OVER $3 BILLION

Syncrude’s continued focus on identifying more opportunities for regional suppliers led to a record $342 million spend with Aboriginal businesses – double the previous year’s spend of $174 million and 10 per cent of our total annual procurement. Cumulative procurement from Aboriginal suppliers now totals over $3 billion.

A highlight during the year was the signing of a General Purchase Agreement between Fort McKay Logistics and Sinopec USA, a relationship brokered by Syncrude. It allows Fort McKay (wholly owned by the Fort McKay First Nation) access to Chinese manufacturers via Sinopec, thus enabling Fort McKay to expand its business to include sales and distribution of commodity and specialty products. The collaboration allows Syncrude to establish a complete Supply Chain Business Solution as it procures these goods from Fort McKay Logistics.
Our Aboriginal Workforce

Syncrude’s Aboriginal workforce comprised 481 people in 2017, representing 10.1 per cent of our total employee population. This ranks among the highest levels of Aboriginal representation in our history. In addition, Aboriginal people comprised around 11 per cent of all new hires during the year, with Aboriginal employee attrition lower than the general employee attrition rate. Our goal is for Syncrude’s Aboriginal workforce to reflect Aboriginal representation in the Wood Buffalo region, which was about nine per cent in 2016, according to Statistics Canada.

Community Investment

Syncrude regularly invests in initiatives and programs that support our key Indigenous commitment areas of corporate leadership, education, employment, business, community development and the environment. Over $1 million was contributed in 2017 to initiatives through Athabasca University, Institute for the Advancement of Aboriginal Women, Indspire, National Gathering of Elders, Nunee Health Board Society and Athabasca Delta Community School, as well as for programming through the University of Alberta, employment and skills training at Chipewyan Prairie Dene First Nation and youth development at Fort McMurray #468 First Nation, to name a few.
COMMUNITY RELATIONS

OUR PERFORMANCE
• Consultation continues on proposed Mildred Lake Extension (MLX) project
• $6.2 million invested in community projects and initiatives
• Employees and retirees contribute over 9,800 volunteer hours

OUR APPROACH
Syncrude aims to earn and maintain public confidence through effective engagement with stakeholders and Aboriginal communities of interest. We seek ideas, input and feedback on our plans in a manner that fosters cooperation and trust. We are committed to ensuring our employees fully understand our goals, plans and performance, and the role they play in our success. We also contribute to projects that promote growth and well-being, and enhance the quality of life where we live and work.

OIL SANDS COMMUNITY ALLIANCE
Through our involvement in the Oil Sands Community Alliance, Syncrude continued in 2017 to support this industry-funded group in its work to manage the socio-economic impacts of oil sands development. OSCA focus areas include Aboriginal Community Relations, Community Well-Being, Infrastructure and Workforce. Work is stewarded by the OSCA Steering Group, and by committees and task groups that focus on community well-being and Aboriginal community relations, as well as various infrastructure matters. Syncrude employees serve at each level.

Commensurate with its belief that the Wood Buffalo region’s success depends on a competitive oil sands industry, OSCA worked with the RMWB, through the Wood Buffalo Steering Committee, to develop a joint recommendation on municipal tax rates to comply with the new Municipal Government Act requirements. This recommendation was passed by the Mayor and Council in September 2017 and is the basis for current RMWB budgets.
Syncrude made community donations totaling $6.2 million in 2017. The funds supported our objective of enriching the lives of our employees and the communities where we do business. Donations were directed toward organizations and endeavours in the Wood Buffalo region and Edmonton, focused on education, Aboriginal-related initiatives, community well-being, and safety, health & environment. More about our corporate giving guidelines can be found on our website.

Organizations which received funding from Syncrude in 2017 include: Alberta Conservation Association, Compassion House Foundation, Hub Family Resource Centre, Northern Lights Regional Health Foundation, Safe Community Wood Buffalo, Skills Canada, United Way, Waypoints Emergency Shelter, Wood Buffalo Community Foundation, Wood Buffalo Food Bank, Wood Buffalo Regional Library and YMCA Northern Alberta.
RECOGNIZING EMPLOYEE VOLUNTEERS
Our Good Neighbours Program encourages employees and retirees to volunteer for the organizations that matter the most to them. Over $293,000 was donated to various registered non-profit or charitable organizations and projects in 2017 alone, recognizing over 9,800 volunteer hours.

Organizations are eligible to receive up to $750 once an employee or retiree volunteers a minimum of 40 hours within the calendar year. Employees who volunteer for local sports or recreation teams may also apply to receive a busing grant of $2,500 to help offset the cost of travel outside of the community for tournaments or competitions.

EMPLOYEE-DIRECTED COMMUNITY INVESTMENT
Through an on-line voting process, Syncrude makes available $50,000 annually for employees to select five local charitable or non-profit organizations to receive support. In 2017, the SPCA received the most votes and received a donation of $25,000. The funds have allowed them to buy needed medical supplies for surgeries along with the food, toys and dishes needed for animals in their care. Four other organizations – Big Brothers Big Sisters, Heritage Park Historical Society, Fort McMurray Search & Rescue, and The Kinette Club – received $5,000 each.

Employees living in Calgary and Edmonton also participated in voting for organizations in their communities, with YMCA Calgary and Dogs with Wings Assistance Society in Edmonton receiving $2,500 each.
PEOPLE

OUR PERFORMANCE
- Syncrude recognized for employee communications during 2016 wildfire evacuation
- United Way 2017 workplace campaign raises more than $2.4 million
- 90 per cent of all new employees hired from local region

OUR APPROACH
Syncrude supports strong employee programs that provide a respectful workplace and rewarding careers, hiring locally from the Wood Buffalo region wherever possible and building an organization of proud and motivated employees.

2017 WORKFORCE OVERVIEW
Hiring occurred in key essential positions and we welcomed 236 new employees during the year, including 25 Aboriginal employees. In total, 90 per cent of all new employees were hired from the local region.

AUTONOMOUS TRUCKS
Syncrude is monitoring the autonomous truck technology being tested by our Joint Venture Participants and other oil sands operators, but we have no current plans to implement this at our operation. We continue to hire equipment operators while also supporting training initiatives such as the Haul Truck Operator program at Keyano College to ensure skills and capacity continue to build in the region.

ENGAGING WITH OUR EMPLOYEES
In 2017, about 20 per cent of permanent employees were randomly selected to share their opinions and perceptions on a variety of workplace topics in an anonymous on-line survey. Key findings from the survey included an overwhelmingly positive view of Syncrude’s support for employees during and after the 2016 wildfire. Areas identified for improvement included performance evaluation and feedback, training and development, and work processes and efficiencies.
EMPLOYEE LOANEE PROGRAM
As part of Syncrude’s overall corporate focus on reducing costs and improving efficiencies, managers and leaders are asked to review their workforce and where able, allow a temporary loan of employees to help meet business needs during maintenance turnarounds. The Employee Loanee Program helps maximize utilization of Syncrude’s existing workforce, reducing reliance on external contractors. It also enables further career development.

CAREER DEVELOPMENT FOR NEW GRADUATES
Syncrude’s Initial Professional Development Program (IPDP) aims to provide employees who are recent graduates with the tools necessary to achieve growth and success in the workplace and community. Participants spend three to four years in the program, which includes a variety of development activities and mentorship from experienced professionals. Participants’ workplace responsibilities in their given areas progress throughout their time in the program, until completion when they are then promoted to the fully qualified level. About 90 employees were active in the program in 2017.

WOMEN’S INTEREST NETWORK
Syncrude’s Women’s Interest Network, launched in late 2015, continued to gain traction and members during the year. More than 40 per cent of our female workforce have now joined the group, as have many male employees, which is working to provide mentorship, personal development, networking, community involvement activities and more.

Syncrude’s United Way campaign raised over $2.4 million in 2017. The company was also recognized with the United Way President’s Award for 2016.
VISION AND VALUES AWARDS

To recognize employee teams and individuals that exemplify Syncrude’s Vision & Values, Syncrude introduced in 2017 the Vision & Values Awards – the company’s highest level of employee recognition. Twenty-six employee groups and individuals were honoured for their 2016 contributions to Syncrude’s success.


CORPORATE AWARDS

Syncrude is proud to have received several awards in 2017, including:

- **Inspired Leader of the Year**, International Association of Business Communicators Edmonton Chapter – recognizing former CEO Mark Ward’s outstanding communications during the 2016 wildfire.

- **Award of Merit for Issues Management & Crisis Communications**, International Association of Business Communicators Edmonton Chapter – for communications excellence during the 2016 wildfire.

- **Award of Excellence for Crisis Communications**, Canadian Public Relations Society – for communications efforts during the 2016 wildfire.

- **John Aldred Ambassadorship Award of Excellence**, CAREERS: The Next Generation – for Vice President of Government and Public Affairs Kara Flynn’s demonstrated support toward the entry of youth into trades and technology training and careers.

- **Towards Sustainable Mining (TSM) Leadership Award**, Mining Association of Canada – recognizing Syncrude for meeting or exceeding all of the performance indicators in the TSM program.

- **John Convey Innovation Award**, Canada Council of ASM International – recognizing Syncrude’s Reliability and Performance Improvement Team for excellence in the Canadian energy sector.

- **Partners in Education**, Fort McMurray Public School District – for Syncrude’s contributions and support.
FINDING A BETTER WAY

Syncrude has been certified six times at the Gold Level of the Progressive Aboriginal Relations program of the Canadian Council for Aboriginal Business, recognizing our work to engage with and create opportunities for Aboriginal businesses and communities.

ABORIGINAL BUSINESS
Cumulative spending with Aboriginal suppliers totals over $3 billion since 1992.

COMMUNITY INVESTMENT
Syncrude invested $6.2 million in 2017 toward community organizations and endeavours.

RECOGNIZING VOLUNTEERISM
Over $293,000 was donated to various community organizations in 2017, recognizing over 9,800 hours of employee volunteer efforts.

LOCAL OPPORTUNITIES
Syncrude is committed to hiring locally whenever possible and in 2017 about 90 per cent of new hires were sourced from the local region.

OVER 10% ABORIGINAL REPRESENTATION IN 2017 WORKFORCE
ECONOMIC SUSTAINABILITY
With several different products produced in Canada’s oil sands, Syncrude Sweet Premium is a cut above. Our operation is unique in that it produces a high quality, light, sweet crude oil that’s used to fuel vehicles, heat homes and more.

Employees like control room operator Randy Wood help Syncrude produce the equivalent of about 15 per cent of Canada’s daily oil requirements. He and his control room colleagues can be considered the eyes and ears of our operation.

When it comes to optimizing Syncrude’s production, Randy says it’s about making sure we do our due diligence to keep everything under control and work as a team to achieve the best results.

Randy adds that his time at Syncrude has taught him to look for new and innovative ways to improve. And although his job comes with challenges, Randy and his team take great pride in what they do. “I’m proud to do my part in the company. We’re always on the lookout to do better.”

“...We strive to reliably and responsibly provide Canadians with a high quality energy product they use so much in their everyday lives.”
At $3.4 billion, procurement comprised the largest portion of our expenditures. This included $342 million with Aboriginal businesses – double from the previous year and representing 10 per cent of our 2017 procurement spend – and over $1.3 billion with local businesses and suppliers in the Wood Buffalo region. We spent another $1.3 billion with businesses elsewhere in Alberta and $264 million in the rest of Canada. Of our total annual procurement, 95 per cent was spent in Canada.

**GEOGRAPHIC DISTRIBUTION OF PROCUREMENT SPEND**

(Provides a visual representation of procurement spend by location, indicating the proportions as follows:
- 39% Municipality of Wood Buffalo
- 38% Rest of Alberta
- 10% Aboriginal-owned Enterprises
- 8% Rest of Canada
- 5% International

**OPERATIONS AND FOCUS ON RELIABILITY**

The first half of 2017 was difficult, with a major process safety incident in March involving a fire in one of our naphtha hydrotreaters. This impacted production until August from which time we averaged 340,000 barrels of crude oil per day, delivering about 4.6 million barrels above plan for the last five months of the year. Total shipments for the year however, at 91.2 million barrels, were 17 million barrels short of budget.

Despite the setbacks, progress was still made toward improving reliability and increasing future production. One example is at the Aurora Mine, where hydrotransport system maintenance outages now occur every 3,000 hours, up from the previous 500 hours, due to a redesigned screen cloth and innovations in the pumps and pipes. Further improvements should see maintenance outages reduced to after every 6,000 hours of operation.

Bitumen recovery rates are increasing due to the addition of sodium citrate to hydrotransport feed. This new Syncrude-developed process aid also results in less hydrocarbons in tailings, lower energy intensity in the bitumen extraction process, and reduced water use.
COLLABORATION WITH JOINT VENTURE PARTICIPANTS

Syncrude’s Joint Venture structure provides an opportunity to combine the Participants’ knowledge and experience with Syncrude’s long history in the oil sands towards accelerating progress in shared areas of interest. Current collaborative projects include leveraging corporate and regional services such as trucking bitumen to Syncrude from Suncor’s McKay River operation during unit outages. We are also working with Suncor and Imperial Oil to perform annual exploration and drilling programs. As well, teams have been established to bring experts together to share benchmarks and knowledge on a range of equipment and practices across our operations. Other initiatives include talent sharing and facilities efficiencies.

Progress is being made to combine the experience and knowledge of Syncrude and our Joint Venture Participants to improve operational performance.
Syncrude invested $74.5 million toward research and development in 2017. We have been recognized as one of Canada’s top 20 innovation leaders by RESEARCH Infosource, which ranks Syncrude in the 17th spot, with R&D expenditures totaling $1.1 billion during the 2001-2015 period. Our company was one of two oil and gas companies to make the list. As well, Syncrude is responsible for the creation of over 200 patents to date.

Syncrude environmental technologies related to tailings management, water use and reclamation are published and shared openly through technical journals, conferences and collaborative industry groups such as Canada’s Oil Sands Innovation Alliance (COSIA). We are also currently a key stakeholder in eight Natural Sciences and Engineering Research Council of Canada (NSERC) Industrial Research Chairs.

Syncrude filed in late 2014 our regulatory application to develop the Mildred Lake Extension (MLX). The project will sustain bitumen production levels from the North Mine when currently approved Mildred Lake mining areas are depleted and is one of the lowest-cost developments in the oil sands. A hearing is scheduled for early 2019 and consultations continue with communities of interest.

The remainder of our focus is on continuing efforts to improve efficiency and plant reliability in existing operations. This work should increase production and add near-term value.
FINDING A BETTER WAY

Syncrude contributed over $5.4 billion to the Canadian economy in 2017 – with over a third in the local Wood Buffalo region – through the procurement of goods and services, payment of taxes and royalties, and salaries.

ECONOMIC IMPACT
In 2017, over $3.4 billion was spent on the procurement of goods and services, of which 10 per cent was with Aboriginal suppliers and 95 per cent was spent in Canada.

PROCESS IMPROVEMENTS
A new Syncrude-developed process aid is resulting in improved bitumen recovery rates, less hydrocarbons in tailings, lower energy intensity and reduced water use.

IMPROVING RELIABILITY
Aurora Mine hydrotransport maintenance outages decreasing due to redesigned screen cloths and innovations in pumps and pipes.

91.2M BARRELS OF LIGHT, SWEET CRUDE OIL IN 2017
### KEY PERFORMANCE INDICATORS:

#### AIR EMISSIONS

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<td>Ozone-depleting substances (kg CFC11 equivalent per year)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sulphur dioxide (thousand tonnes per year)</td>
<td>63.13</td>
<td>25.43</td>
<td>27.95</td>
<td>22.46</td>
<td>31.05</td>
</tr>
<tr>
<td>Sulphur dioxide emission intensity (kg per m³ production)</td>
<td>4.02</td>
<td>1.67</td>
<td>1.91</td>
<td>1.41</td>
<td>1.95</td>
</tr>
<tr>
<td>Sulphur dioxide emission intensity (tonnes per thousand barrels production)</td>
<td>0.63</td>
<td>0.27</td>
<td>0.30</td>
<td>0.22</td>
<td>0.31</td>
</tr>
<tr>
<td>Nitrogen oxides (thousand tonnes per year)</td>
<td>26.11</td>
<td>26.73</td>
<td>24.39</td>
<td>20.81</td>
<td>26.70</td>
</tr>
<tr>
<td>Nitrogen oxides emission intensity (kg per m³ production)</td>
<td>1.67</td>
<td>1.78</td>
<td>1.67</td>
<td>1.31</td>
<td>1.68</td>
</tr>
<tr>
<td>Nitrogen oxides emission intensity (tonnes per thousand barrels production)</td>
<td>0.27</td>
<td>0.28</td>
<td>0.27</td>
<td>0.21</td>
<td>0.27</td>
</tr>
<tr>
<td>Volatile organic compounds (VOCs)¹ (thousand tonnes per year)</td>
<td>31.85</td>
<td>33.15</td>
<td>22.94</td>
<td>12.77</td>
<td>11.83</td>
</tr>
<tr>
<td>Volatile organic compounds (VOCs)¹ (kg per m³ production)</td>
<td>2.03</td>
<td>2.18</td>
<td>1.57</td>
<td>0.80</td>
<td>0.81</td>
</tr>
<tr>
<td>Volatile organic compounds (VOCs)¹ (tonnes per thousand barrels production)</td>
<td>0.32</td>
<td>0.35</td>
<td>0.25</td>
<td>0.13</td>
<td>0.13</td>
</tr>
<tr>
<td>PM - Total particulate matter (tonnes per year)</td>
<td>14,052</td>
<td>18,067</td>
<td>17,805</td>
<td>20,974</td>
<td>19,042</td>
</tr>
<tr>
<td>PM10 - Particulate matter &lt;= 10 microns (tonnes per year)</td>
<td>5,124</td>
<td>6,633</td>
<td>5,649</td>
<td>6,507</td>
<td>5,896</td>
</tr>
<tr>
<td>PM2.5 - Particulate matter &lt;= 2.5 microns (tonnes per year)</td>
<td>1,096</td>
<td>1,391</td>
<td>924</td>
<td>1,022</td>
<td>919</td>
</tr>
<tr>
<td>Sour gas diverting (tonnes per day SO₂)</td>
<td>0.70</td>
<td>1.11</td>
<td>0.05</td>
<td>1.11</td>
<td>0</td>
</tr>
<tr>
<td>Sour gas flaring (tonnes per day SO₂)</td>
<td>7.40</td>
<td>8.23</td>
<td>21.19</td>
<td>3.76</td>
<td>20.84</td>
</tr>
<tr>
<td>Flaring (emergency and non-emergency) (million standard m³)</td>
<td>120.80</td>
<td>222.79</td>
<td>1,411.69</td>
<td>248.17</td>
<td>336.30</td>
</tr>
<tr>
<td>Flaring Intensity (emergency and non-emergency) (m³ per m³ production)</td>
<td>7.69</td>
<td>14.66</td>
<td>96.59</td>
<td>15.59</td>
<td>23.10</td>
</tr>
<tr>
<td>Diverter stack usage (hours per year)</td>
<td>97.70</td>
<td>268.70</td>
<td>20.79</td>
<td>207.60</td>
<td>1.0</td>
</tr>
<tr>
<td>Main stack sulphur dioxide (hours greater than 16.4 tonnes per hour)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Main stack sulphur dioxide (90-day rolling average &gt;245 tonnes)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Main stack nitrogen oxides (# hours &gt; 1.5 tonnes per hour)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Main stack opacity (# hours &gt; 40%)</td>
<td>0</td>
<td>656</td>
<td>5</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Ambient air exceedences H₂S hourly (#)</td>
<td>1</td>
<td>11</td>
<td>3</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Ambient air exceedences H₂S 24-hour period (#)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ambient air exceedences SO₂ hourly (#)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Ambient air exceedences SO₂ 24-hour period (#)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Odour complaints (# attributed to Syncrude)</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>26</td>
<td>40</td>
</tr>
</tbody>
</table>

¹ Syncrude reports annually to the National Pollutant Release Inventory. A comprehensive annual breakdown of substances reported, including VOCs, can be found at www.ec.gc.ca/inrp-npri/ and typing “Syncrude” in the Facility Name search field.

#### ENERGY USE

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total energy consumption (million GJ)</td>
<td>138.4</td>
<td>139.2</td>
<td>137.0</td>
<td>129.8</td>
<td>137.7</td>
</tr>
<tr>
<td>Energy intensity (GJ per M³)</td>
<td>8.71</td>
<td>9.22</td>
<td>9.14</td>
<td>8.15</td>
<td>9.23</td>
</tr>
</tbody>
</table>

Note: Total energy consumption includes natural gas, internally produced fuels, and purchased/sold energy such as electricity and diesel. It is not adjusted for inventory increases or decreases.
### GREENHOUSE GAS EMISSIONS

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHGs1,4</strong> (million tonnes)</td>
<td>12.46</td>
<td>11.90</td>
<td>11.47</td>
<td>11.22</td>
<td>11.34</td>
</tr>
<tr>
<td><strong>GHGs2,3,4</strong> (million tonnes)</td>
<td>10.91</td>
<td>10.37</td>
<td>9.97</td>
<td>9.49</td>
<td>9.80</td>
</tr>
<tr>
<td><strong>GHGs2,3,4</strong> (tonnes CO₂e per barrel produced)</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>GHGs2,3,4</strong> (tonnes CO₂e per cubic metre produced)</td>
<td>0.69</td>
<td>0.68</td>
<td>0.68</td>
<td>0.60</td>
<td>0.68</td>
</tr>
<tr>
<td>Alberta carbon payments5 ($ million)</td>
<td>26.73</td>
<td>19.90</td>
<td>19.73</td>
<td>9.30</td>
<td>58.01</td>
</tr>
</tbody>
</table>

1. As reported to Environment and Climate Change Canada. Emission calculations for the purpose of provincial and federal regulatory reporting will differ, as certain sources of emissions are excluded.
2. CO₂-equivalent emissions reported include all Syncrude sources (net of industrial process, biomass, and waste and wastewater emissions) as reported to the Government of Alberta under the Specified Gas Emitters Regulation (SGER) and the Carbon Competitiveness Incentive Regulation (CCIR).
3. Syncrude’s 2017 GHG emission estimates were verified by RWDI Consulting to satisfy the ‘Third party Review’ required by the Carbon Competitiveness Incentive Regulation (CCIR).
4. Syncrude is a large producer of electricity and is a net exporter to the Alberta grid. Emissions from electrical power generation are included in the Syncrude total and are part of the intensity calculated on a per-barrel produced basis.
5. Includes fund credit purchases paid to the Government of Alberta under the Specified Gas Emitters Regulation (SGER) and the Carbon Competitiveness Incentive Regulation (CCIR).

### LAND USE

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cleared1</strong> (cumulative hectares)</td>
<td>3,526</td>
<td>3,876</td>
<td>3,528</td>
<td>3,190</td>
<td>2,847</td>
</tr>
<tr>
<td><strong>Disturbed: land used for mine or plant purposes1</strong> (cumulative hectares)</td>
<td>19,552</td>
<td>19,983</td>
<td>20,085</td>
<td>20,455</td>
<td>29,017</td>
</tr>
<tr>
<td><strong>Total active footprint – mine and plant site footprint1</strong> (cumulative hectares)</td>
<td>28,120</td>
<td>28,951</td>
<td>28,963</td>
<td>29,027</td>
<td>29,913</td>
</tr>
<tr>
<td><strong>Soils placed – land available for revegetation1</strong> (cumulative hectares)</td>
<td>1,075</td>
<td>1,047</td>
<td>1,080</td>
<td>1,044</td>
<td>730²</td>
</tr>
<tr>
<td><strong>Temporary reclamation1</strong> (cumulative hectares)</td>
<td>668</td>
<td>632</td>
<td>703</td>
<td>697</td>
<td>1,046²</td>
</tr>
<tr>
<td><strong>Permanent land reclaimed1</strong> (hectares per year)</td>
<td>103</td>
<td>81</td>
<td>54</td>
<td>126</td>
<td>215</td>
</tr>
<tr>
<td><strong>Permanent land reclaimed1,3,4</strong> (cumulative hectares)</td>
<td>3,403</td>
<td>3,516</td>
<td>3,568</td>
<td>3,642</td>
<td>3,843</td>
</tr>
<tr>
<td><strong>Trees and shrubs planted (# per year)</strong></td>
<td>305,500</td>
<td>157,900</td>
<td>272,300</td>
<td>408,300</td>
<td>402,500</td>
</tr>
<tr>
<td><strong>Trees and shrubs planted (millions, cumulative)</strong></td>
<td>7.2</td>
<td>7.4</td>
<td>7.7</td>
<td>8.1</td>
<td>8.5</td>
</tr>
</tbody>
</table>

1. For a full list of definitions regarding land use and reclamation in Alberta’s oil sands, visit [www.osip.alberta.ca](http://www.osip.alberta.ca).
2. Reflects a land status change from soils placed to temporary reclamation.
3. Includes land certified by the Alberta Government.
4. Numbers reflect the addition of all newly reclaimed areas as well as any reclamation losses due to redisturbance that may occur. Syncrude promotes early reclamation of unused land when practical. This may result in future re-disturbance of areas that have been reclaimed in the past. Reclaimed areas may be selected as project sites, pipeline or power line corridors, or work may be necessary to maintain the integrity of the underlying structure.

Note: Syncrude conducts quality assurance checks of reclamation data in support of the Alberta Government geospatial database submission requirement. This process involves survey and investigation to verify field conditions, interpretation of air photos and satellite imagery to adjust boundaries, and analysis of historic data and classification. This work can result in adjustments to previously reported information.

### TAILINGS MANAGEMENT

#### Mildred Lake

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluid tailings volumes (million m³)</strong></td>
<td>–</td>
<td>469.6</td>
<td>476.3</td>
<td>501.2</td>
<td>502.1</td>
</tr>
<tr>
<td><strong>Centrifuge cake produced¹</strong> (million m³)</td>
<td>–</td>
<td>2.5</td>
<td>3.5</td>
<td>5.3</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Composite Tails (CT) produced²</strong> (million m³)</td>
<td>–</td>
<td>12.1</td>
<td>11.0</td>
<td>1.1</td>
<td>2.36</td>
</tr>
</tbody>
</table>

#### Aurora North

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fluid tailings volumes (million m³)</strong></td>
<td>–</td>
<td>113.0</td>
<td>127.9</td>
<td>131.2</td>
<td>136.8</td>
</tr>
<tr>
<td><strong>Composite Tails (CT) produced²</strong> (million m³)</td>
<td>–</td>
<td>13.2</td>
<td>21.7</td>
<td>25.1</td>
<td>5.1</td>
</tr>
</tbody>
</table>

1. Volume of reclaimable treated fluid fine tailings (cake) material produced from centrifuge process, calculated using a combination of instrumentation and sampling data.
2. Volume of reclaimable treated fluid fine tailings (beach deposit) material produced from composite tails (CT) process, calculated assuming a dry density of 1.45 tonnes/m³.

Note: Performance metrics are aligned to ensure consistency with reports to the Alberta Energy Regulator.

### WASTE MANAGEMENT

#### Non-hazardous waste recycled or reused

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solid¹</strong> (tonnes)</td>
<td>20,035</td>
<td>15,803</td>
<td>12,714</td>
<td>2,978</td>
<td>22,634</td>
</tr>
<tr>
<td><strong>Liquid²</strong> (m³)</td>
<td>1,917</td>
<td>4,378</td>
<td>2,732</td>
<td>2,831</td>
<td>3,542</td>
</tr>
</tbody>
</table>

#### Non-hazardous waste disposal

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-site</strong> (tonnes)</td>
<td>25,176</td>
<td>13,336</td>
<td>17,236</td>
<td>121,731</td>
<td>186,920</td>
</tr>
<tr>
<td><strong>Off-site</strong> (tonnes)</td>
<td>29</td>
<td>99</td>
<td>&lt;1</td>
<td>1,447</td>
<td>1,875</td>
</tr>
</tbody>
</table>
### Waste Management

#### Hazardous or potentially hazardous materials sent for off-site treatment, destruction or disposal

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling (tonnes)</td>
<td>2,790</td>
<td>2,864</td>
<td>4,442</td>
<td>3,880</td>
<td>268</td>
</tr>
<tr>
<td>Treatment, destruction or disposal (tonnes)</td>
<td>382</td>
<td>3,391</td>
<td>579</td>
<td>232</td>
<td>184</td>
</tr>
<tr>
<td>Treatment, destruction or disposal (m³)</td>
<td>&lt;1</td>
<td>31</td>
<td>899</td>
<td>1,149</td>
<td>3,374</td>
</tr>
</tbody>
</table>

#### Sanitary non-hazardous disposal

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-site (tonnes)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Off-site (tonnes)</td>
<td>2,603</td>
<td>3,060</td>
<td>1,763</td>
<td>1,418</td>
<td>1,737</td>
</tr>
</tbody>
</table>

1 Includes recycled materials such as catalyst, scrap metal, tires, conveyor belting, batteries, aerosols, oil/fuel filters, oily rags, refrigerant, plastic and metal drums, electronic waste, fluorescent tubes, kitchen grease, paper/cardboard/newsprint, beverage containers and printer cartridges.

2 Includes used oil and used solvents.

3 Includes waste glycol and coolant.

4 Sanitary waste generated at Syncrude is disposed of at the Regional Municipality of Wood Buffalo’s landfill.

### Water Use

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water withdrawal (million m³)</td>
<td>37.2</td>
<td>38.8</td>
<td>37.6</td>
<td>34.9</td>
<td>36.4</td>
</tr>
<tr>
<td>Fresh water use intensity (barrel water per barrel crude oil produced)</td>
<td>2.37</td>
<td>2.55</td>
<td>2.57</td>
<td>2.19</td>
<td>2.50</td>
</tr>
<tr>
<td>Fresh water use intensity (barrel water per barrel bitumen produced)</td>
<td>1.98</td>
<td>2.18</td>
<td>2.17</td>
<td>1.89</td>
<td>2.10</td>
</tr>
<tr>
<td>Water returned to the Athabasca River – treated sanitary (million m³)</td>
<td>0.27</td>
<td>0.30</td>
<td>0.22</td>
<td>0.16</td>
<td>0.18</td>
</tr>
<tr>
<td>Water returned to the Athabasca River – other (million m³)</td>
<td>5.9</td>
<td>6.5</td>
<td>7.9</td>
<td>4.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Process water recycled (million m³)</td>
<td>259</td>
<td>218</td>
<td>236</td>
<td>241</td>
<td>239</td>
</tr>
<tr>
<td>Process water recycled (% total water used)</td>
<td>87</td>
<td>85</td>
<td>86</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>Water discharge quality exceedences (treated sanitary) (# incidents)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water discharge quality exceedences (industrial process) (# incidents)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reportable spills to natural water bodies (m³)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

1 Athabasca River diversion for direct operations use only. In 2017, under regulatory approval, an additional 2.8 Mm³ of fresh water was diverted from Beaver Creek Reservoir for the Base Mine Lake tailings reclamation demonstration project. Also, an additional 1.1 Mm³ of basal groundwater was diverted for use in Aurora plant operations.

### Employment

#### Permanent workforce

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>5,188</td>
<td>5,121</td>
<td>4,851</td>
<td>4,735</td>
<td>4,694</td>
</tr>
<tr>
<td># under age 30¹</td>
<td>–</td>
<td>–</td>
<td>541</td>
<td>473</td>
<td>559</td>
</tr>
<tr>
<td># age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>2,817</td>
<td>2,780</td>
<td>2,790</td>
</tr>
<tr>
<td># over 50¹</td>
<td>–</td>
<td>–</td>
<td>1,493</td>
<td>1,482</td>
<td>1,345</td>
</tr>
<tr>
<td>% under age 30¹</td>
<td>–</td>
<td>–</td>
<td>11</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>% age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>58</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>% over 50¹</td>
<td>–</td>
<td>–</td>
<td>31</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>Temporary and casual (#)</td>
<td>156</td>
<td>127</td>
<td>119</td>
<td>157</td>
<td>170</td>
</tr>
<tr>
<td>Trades and operators (#)</td>
<td>2,848</td>
<td>2,827</td>
<td>2,661</td>
<td>2,620</td>
<td>2,604</td>
</tr>
<tr>
<td>Administrative, professional and technical (#)</td>
<td>2,340</td>
<td>2,294</td>
<td>2,190</td>
<td>2,115</td>
<td>2,090</td>
</tr>
<tr>
<td>% employees covered by collective bargaining agreements</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
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#### Leadership:

<table>
<thead>
<tr>
<th></th>
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<th>2014</th>
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<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>% under age 30²</td>
<td>–</td>
<td>–</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>% age 30-50²</td>
<td>–</td>
<td>–</td>
<td>61.3</td>
<td>61.5</td>
<td>64.0</td>
</tr>
<tr>
<td>% over 50²</td>
<td>–</td>
<td>–</td>
<td>34.3</td>
<td>34.1</td>
<td>31.9</td>
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#### New employees

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Total</td>
<td>508</td>
<td>138</td>
<td>75</td>
<td>173</td>
<td>236</td>
</tr>
<tr>
<td># under age 30¹</td>
<td>–</td>
<td>–</td>
<td>48</td>
<td>95</td>
<td>122</td>
</tr>
<tr>
<td># age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>23</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td># over 50¹</td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>% under age 30¹</td>
<td>–</td>
<td>–</td>
<td>64</td>
<td>55</td>
<td>52</td>
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## EMPLOYMENT

<table>
<thead>
<tr>
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<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>% age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>31</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>% over 50¹</td>
<td>–</td>
<td>–</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Trades and operators (#)</td>
<td>331</td>
<td>95</td>
<td>30</td>
<td>125</td>
<td>181</td>
</tr>
<tr>
<td>Administrative, professional and technical (#)</td>
<td>177</td>
<td>43</td>
<td>45</td>
<td>48</td>
<td>55</td>
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<tr>
<td>Male (#)</td>
<td>395</td>
<td>110</td>
<td>43</td>
<td>134</td>
<td>187</td>
</tr>
<tr>
<td>Aboriginal (#)</td>
<td>32</td>
<td>16</td>
<td>11</td>
<td>33</td>
<td>25</td>
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<tr>
<td>Female (#)</td>
<td>113</td>
<td>28</td>
<td>32</td>
<td>39</td>
<td>49</td>
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## Diversity

### Aboriginal representation²:

<table>
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<tr>
<th></th>
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<th>464</th>
<th>461</th>
<th>470</th>
<th>481</th>
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</thead>
<tbody>
<tr>
<td>% of permanent Syncrude workforce</td>
<td>8.8</td>
<td>8.9</td>
<td>9.4</td>
<td>9.8</td>
<td>10.1</td>
</tr>
<tr>
<td>% of new hires</td>
<td>6.3</td>
<td>11.6</td>
<td>14.7</td>
<td>19.1</td>
<td>10.6</td>
</tr>
<tr>
<td>% of leaders²</td>
<td>6.2</td>
<td>5.8</td>
<td>6.1</td>
<td>7.3</td>
<td>6.8</td>
</tr>
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</table>

### Female representation:

<table>
<thead>
<tr>
<th></th>
<th>988</th>
<th>958</th>
<th>909</th>
<th>889</th>
<th>876</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of permanent Syncrude workforce</td>
<td>19</td>
<td>18.7</td>
<td>18.7</td>
<td>18.8</td>
<td>18.7</td>
</tr>
<tr>
<td>% of new hires</td>
<td>22.2</td>
<td>20.3</td>
<td>42.7</td>
<td>22.5</td>
<td>20.8</td>
</tr>
<tr>
<td>% of leaders²</td>
<td>11.6</td>
<td>12.3</td>
<td>12.6</td>
<td>14.7</td>
<td>14.6</td>
</tr>
</tbody>
</table>

## Recruiting effectiveness

<table>
<thead>
<tr>
<th></th>
<th>82</th>
<th>91</th>
<th>94</th>
<th>93</th>
<th>93</th>
</tr>
</thead>
<tbody>
<tr>
<td>New hire acceptance rate (%)</td>
<td>74</td>
<td>82</td>
<td>51</td>
<td>94</td>
<td>90</td>
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</table>

## Attrition

<table>
<thead>
<tr>
<th></th>
<th>7.5</th>
<th>4.0</th>
<th>6.6</th>
<th>5.8</th>
<th>5.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>% under age 30¹</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>44</td>
<td>29</td>
</tr>
<tr>
<td>% age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>124</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>% over 50¹</td>
<td>–</td>
<td>–</td>
<td>158</td>
<td>157</td>
<td>134</td>
</tr>
<tr>
<td>% under age 30¹</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>13.5</td>
<td>10.5</td>
</tr>
<tr>
<td>% age 30-50¹</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>38.0</td>
<td>32.6</td>
</tr>
<tr>
<td>% over 50¹</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>48.5</td>
<td>56.9</td>
</tr>
<tr>
<td>Company initiated termination (%)</td>
<td>0.7</td>
<td>0.9</td>
<td>1.3</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Retirements (%)</td>
<td>2.0</td>
<td>1.0</td>
<td>2.8</td>
<td>2.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Aboriginal (%)</td>
<td>8.2</td>
<td>6.0</td>
<td>6.0</td>
<td>6.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Female (%)</td>
<td>8.3</td>
<td>6.1</td>
<td>7.3</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Trades and operators (%)</td>
<td>8.5</td>
<td>3.4</td>
<td>5.6</td>
<td>5.0</td>
<td>5.6</td>
</tr>
<tr>
<td>Administrative, professional and technical (%)</td>
<td>6.8</td>
<td>4.8</td>
<td>7.8</td>
<td>6.7</td>
<td>5.1</td>
</tr>
</tbody>
</table>

## Employee productivity

<table>
<thead>
<tr>
<th></th>
<th>18.8</th>
<th>18.4</th>
<th>18.7</th>
<th>21.0</th>
<th>19.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thousand barrels of production per employee</td>
<td>9.0</td>
<td>8.9</td>
<td>10.7</td>
<td>11.0</td>
<td>11.6</td>
</tr>
<tr>
<td>Average employee service (in years)</td>
<td>8.2</td>
<td>8.2</td>
<td>9.6</td>
<td>10.0</td>
<td>10.7</td>
</tr>
<tr>
<td>Female</td>
<td>10.7</td>
<td>10.7</td>
<td>12.3</td>
<td>12.2</td>
<td>12.9</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>10.7</td>
<td>10.7</td>
<td>12.3</td>
<td>12.2</td>
<td>12.9</td>
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</table>

## Wages, compensation, training and benefits

<table>
<thead>
<tr>
<th></th>
<th>3.6</th>
<th>4.0</th>
<th>3.6</th>
<th>3.4</th>
<th>3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of standard entry level wage to minimum wage⁴</td>
<td>45.41</td>
<td>41.57</td>
<td>39.25</td>
<td>50.52</td>
<td></td>
</tr>
<tr>
<td># of hours in training per employee⁵</td>
<td>6,519</td>
<td>5,457</td>
<td>3,838</td>
<td>5,130</td>
<td>4,384</td>
</tr>
<tr>
<td># of recognitions to employees⁶</td>
<td>972</td>
<td>814</td>
<td>749</td>
<td>663</td>
<td>695</td>
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### Annual scholarships, bursaries and endowments ($ thousands)

<table>
<thead>
<tr>
<th></th>
<th>53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages, compensation, training and benefits</td>
<td>434</td>
</tr>
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</table>
### EMPLOYMENT

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of employee student scholarships</td>
<td>553</td>
<td>461</td>
<td>425</td>
<td>322</td>
<td>379</td>
</tr>
<tr>
<td>Number of tuition refunds to Syncrude employees</td>
<td>106</td>
<td>129</td>
<td>122</td>
<td>67</td>
<td>158</td>
</tr>
</tbody>
</table>

**Employee & Family Assistance Program (EFAP) utilization**

- **# of clients as % of Syncrude workforce**
  - 2013: 16.8
  - 2014: 19.7
  - 2015: 16.3
  - 2016: 19.5
  - 2017: 16.3

**Ethics and Business Conduct**

- **Anonymous reports of non-conformance**
  - 2013: 18
  - 2014: 18
  - 2015: 11
  - 2016: 11
  - 2017: 18

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated as percentage of permanent Syncrude leaders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-declaration only; Syncrude does not mandate employees to disclose minority or cultural status.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on basic wage for entry level trades/operators position and Alberta hourly minimum wage of each reporting year.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per annum. New indicator starting in 2014 to align with Global Reporting Initiative standard disclosure guidance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes service and safety awards.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Anonymous and confidential reporting is enabled through EthicsPoint, an independent third-party hotline managed by NAVEXGlobal.</td>
<td></td>
<td></td>
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</tr>
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</table>

### SAFETY AND HEALTH

<table>
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<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee lost-time incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.02</td>
<td>0.09</td>
<td>0.02</td>
<td>0.09</td>
<td>0.04</td>
</tr>
<tr>
<td>Contractor lost-time incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.05</td>
<td>0.05</td>
<td>0.03</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Combined employee and contractor lost-time incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.04</td>
<td>0.06</td>
<td>0.02</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>Employee lost-time injuries (#)</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Contractor lost-time injuries (#)</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Combined employee and contractor lost-time injuries (#)</td>
<td>8</td>
<td>11</td>
<td>3</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Employee total recordable incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.71</td>
<td>0.56</td>
<td>0.30</td>
<td>0.53</td>
<td>0.37</td>
</tr>
<tr>
<td>Contractor total recordable incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.71</td>
<td>0.62</td>
<td>0.63</td>
<td>0.58</td>
<td>0.50</td>
</tr>
<tr>
<td>Combined employee and contractor recordable incident rate&lt;sup&gt;1&lt;/sup&gt;</td>
<td>0.71</td>
<td>0.60</td>
<td>0.49</td>
<td>0.56</td>
<td>0.45</td>
</tr>
<tr>
<td>Employee recordable injuries (#)</td>
<td>38</td>
<td>30</td>
<td>15</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>Contractor recordable injuries (#)</td>
<td>103</td>
<td>81</td>
<td>45</td>
<td>34</td>
<td>44</td>
</tr>
<tr>
<td>Combined employee and contractor recordable injuries (#)</td>
<td>141</td>
<td>111</td>
<td>60</td>
<td>59</td>
<td>62</td>
</tr>
<tr>
<td>Syncrude injury severity rate</td>
<td>2.25</td>
<td>4.60</td>
<td>0.60</td>
<td>4.49</td>
<td>4.02</td>
</tr>
<tr>
<td>Contractor injury severity rate</td>
<td>5.45</td>
<td>2.44</td>
<td>2.53</td>
<td>5.93</td>
<td>1.58</td>
</tr>
<tr>
<td>Syncrude and contractor injury severity rate</td>
<td>4.59</td>
<td>3.07</td>
<td>1.74</td>
<td>5.29</td>
<td>2.44</td>
</tr>
<tr>
<td>Injury-free performance - maximum hours between LTIs (million hours)</td>
<td>10.2</td>
<td>10.7</td>
<td>9.7</td>
<td>4.6</td>
<td>4.3</td>
</tr>
<tr>
<td>Employee health - new long-term disability (LTD) cases (#)</td>
<td>29</td>
<td>21</td>
<td>15</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>Employee fatalities (#)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Contractor fatalities (#)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>EH&amp;S professionals on staff (#)</td>
<td>122</td>
<td>104</td>
<td>119</td>
<td>113</td>
<td>107</td>
</tr>
<tr>
<td>Workforce represented in formal joint management-worker H&amp;S committees (i.e. safe operating committees) (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Health and safety convictions (#)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>On-site workforce&lt;sup&gt;2&lt;/sup&gt; (#)</td>
<td>18,923</td>
<td>17,532</td>
<td>11,518</td>
<td>10,337</td>
<td>12,929</td>
</tr>
<tr>
<td>Workforce hours (million)</td>
<td>39.7</td>
<td>37.0</td>
<td>24.3</td>
<td>21.2</td>
<td>27.3</td>
</tr>
</tbody>
</table>

1. Includes occupational illnesses.
2. Full-time equivalent
3. Administration penalties totaling $400 were issued by the Carrier Services Section of Alberta Transportation after deficiencies were identified in a National Safety Code audit. These deficiencies have since been rectified.

**Definitions:**

- A lost-time incident is an injury/illness that requires medical attention and results in the worker being absent from work beyond the day of the injury/illness; lost-time incident statistics include all lost time injuries/illnesses and fatalities.
- Total recordable incident rate includes all injuries/illnesses requiring medical attention, involving work restrictions, or that resulted in a worker being absent from work (recordable injury/illness statistics include all non-first aid injuries/illnesses); it is expressed as injuries/illness per 200,000 work hours.
- Injury severity is the average rate of lost workdays per lost-time injury/illness; only lost-time injuries/illness have days lost.
### Operations and Economic Value

#### Operations

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SSP produced</strong> (million barrels)</td>
<td>97.5</td>
<td>94.2</td>
<td>90.6</td>
<td>99.2</td>
<td>91.2</td>
</tr>
<tr>
<td><strong>SSP produced</strong> (million m³)</td>
<td>15.5</td>
<td>15.0</td>
<td>14.4</td>
<td>15.8</td>
<td>14.5</td>
</tr>
<tr>
<td><strong>SSP produced</strong> (thousand barrels per day)</td>
<td>267</td>
<td>258</td>
<td>248</td>
<td>271</td>
<td>250</td>
</tr>
<tr>
<td><strong>Bitumen produced</strong> (million barrels)</td>
<td>117.8</td>
<td>111.9</td>
<td>109.0</td>
<td>116.1</td>
<td>109.0</td>
</tr>
<tr>
<td><strong>Bitumen produced</strong> (million m³)</td>
<td>18.7</td>
<td>17.8</td>
<td>17.3</td>
<td>18.5</td>
<td>17.3</td>
</tr>
<tr>
<td><strong>Bitumen recovery (%)</strong></td>
<td>91.0</td>
<td>91.2</td>
<td>90.5</td>
<td>90.8</td>
<td>91.2</td>
</tr>
<tr>
<td><strong>Upgrading yield (%)</strong></td>
<td>85.2</td>
<td>84.9</td>
<td>85.0</td>
<td>86.2</td>
<td>83.4</td>
</tr>
<tr>
<td><strong>Spills</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Environmental Compliance Incidents</strong></td>
<td>28</td>
<td>17</td>
<td>24</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td><strong>Environmental fines ($ million)</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Environmental protection orders (#)</strong></td>
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<td>1</td>
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</tr>
</tbody>
</table>

#### Economic Value

| **Operating costs** ($ million)   | 4,749.0  | 5,263.0  | 4,368.2  | 4,081.8  | 4,671.2  |
| **Operating costs** ($ per barrel production) | 48.73   | 55.88   | 48.20    | 41.15    | 51.22    |
| **Capital expenditures** ($ million) | 3,237.2 | 2,036.6  | 600.2    | 294.7    | 245.2    |
| **Research and development expenditures** ($ million) | 189.6   | 116.9   | 61.1     | 68.9     | 74.5     |
| **SSP selling price** ($ per barrel) | 99.76   | 99.24   | 61.27    | 57.03    | 67.55    |
| **Average West Texas Intermediate** ($ per barrel) | 98.05   | 93.00   | 48.80    | 43.30    | 50.95    |
| **SSP selling price premium over West Texas Intermediate (%)** | 1.7     | 6.3     | 25.6     | 31.7     | 32.6     |
| **Revenues** ($ million)          | 9,723   | 9,346   | 5,553    | 5,657    | 6,161    |
| **Retained earnings**            | -       | -       | -       | -       | -       |
| **Community investment** ($ million) | 6.6     | 6.0     | 6.1      | 5.9      | 6.2      |
| **Royalties** ($ million)         | 583     | 669     | 351      | 39       | 526      |
| **Government of Alberta carbon payments** ($ million) | 26.73   | 19.90   | 19.73    | 9.30     | 58.01    |
| **Aboriginal business procurement** ($ million) | 213     | 228     | 199      | 174      | 342      |
| **Payroll and corporate taxes** ($ million) | 382     | 423     | 388      | 396      | 395      |
| **Municipal taxes** ($ million)   | 100     | 113     | 131      | 131      | 122      |
| **Purchased energy** ($ million)  | 392     | 560     | 318      | 261      | 328      |
| **Employees (net)** ($ million)   | 849     | 702     | 847      | 853      | 781      |
| **Goods and services purchased** ($ million) | 6,289   | 5,503   | 3,284    | 2,735    | 3,412    |

1 Production is Syncrude Sweet Premium (SSP) crude oil shipped.
2 Spills or leaks of hydrocarbons, chemicals, waste water and/or recycle water which were not fully captured nor directed into approved containment or disposal. In 2017, 107 spills totaling 49,071 m³ occurred on-site of which all were captured and/or directed into the industrial waste water system, resulting in net zero spill volume. The areas in which these spills occurred were fully cleaned up. No spills occurred off-lease or into the surrounding environment. All releases regardless of volume are reported to the Alberta Energy Regulator (AER) and Alberta Environment and Parks (AEP).
3 An Environmental Compliance Incident is a failure, equipment bypass, or upset, that results in a numerical limit exceedence or operating without a control device (or a malfunctioning control device) as identified in Syncrude’s AEPEA Operating Approval.
4 Operating costs are costs related to the mining of oil sands, the extraction and upgrading of bitumen into Syncrude Sweet Premium (SSP) crude oil, and maintenance of facilities; they also include administration costs, development expenses, start-up costs, research, and purchased energy. There is no generally accepted accounting definition as to what constitutes “Operating Costs.”
5 The accounting treatment of certain costs may vary significantly between different producers; some producers may elect to capitalize or defer and amortize certain expenditures that are recorded as an expense by other producers, and may segment “Corporate” costs.
6 Research and development expenditures will differ from that reported under the Scientific Research and Experimental Development (SR&ED) Tax Incentive Program, as it includes costs ineligible under SR&ED (e.g. expenditures outside of Canada, some overhead, and costs associated with patenting).
7 Production of Syncrude Sweet Premium (SSP) crude oil becomes the property of Syncrude’s Joint Venture Participants at point of departure from the Syncrude plant. As the operator, Syncrude does not collect revenue from the sale of crude oil or other products. Selling price and revenue reported here is solely meant to provide an indication of performance.
8 Syncrude’s annual operating and capital expenditures are funded pro-rata by the Syncrude Joint Venture Participants.
9 Fund credit purchases paid to the Government of Alberta under the Specified Gas Emitters Regulation (SGER).
10 Includes expenditures related to the purchase of diesel, natural gas and electricity.

Note: These figures may differ from those reported by any of the Syncrude Joint Venture Participants due to differences in reporting conventions and methodology.
Syncrude and the Fort McKay First Nation co-manage the Beaver Creek Wood Bison Ranch which is home to around 300 animals grazing on land reclaimed from oil sands mining operations. The herd has contributed to species conservation and is valued for its role in cultural preservation.
The Syncrude Project is a joint venture undertaking among Imperial Oil Resources Limited; Nexen Oil Sands Partnership; Sinopec Oil Sands Partnership; and Suncor Energy Inc. (with the Suncor interest held by Canadian Oil Sands Partnership #1 and Suncor Energy Ventures Partnership, both wholly owned affiliates of Suncor Energy Inc.), as the project owners, and Syncrude as the project operator.