

MURPHY OIL CORPORATION

# SUSTAINABILITY REPORT

## 2021



**Leaning Into  
Challenges**  
with Sustainable Solutions

# About This Report

The Murphy Oil Corporation 2021 Sustainability Report contains data and information regarding the environmental, social and governance (ESG) issues essential to our internal and external stakeholders. We have adopted the five reporting principles of relevance, transparency, consistency, completeness and accuracy, as outlined in the “Sustainability Reporting Guidance for the Oil and Gas Industry, 4th Edition, 2020,” published jointly by the International Petroleum Industry Environmental Conservation Association (IPIECA), the American Petroleum Institute (API) and the International Association of Oil & Gas Producers (IOGP). As this is an area of continual improvement across our industry, we strive to update our disclosures in line with operating developments and with emerging best practice ESG reporting standards.

## Reporting Frameworks and Boundaries

We report annually according to internationally recognized ESG reporting frameworks and standards, including Sustainability Accounting Standards Board (SASB), Task Force on Climate-related Financial Disclosures (TCFD), Global Reporting Initiative (GRI): Core option and IPIECA. In addition, we consider the feedback from key ESG raters.

For ease of locating disclosures by framework, we have included a Content Indices section at the back of this report on page 74. Unless otherwise noted, the data and information reported are at a total enterprise level, for assets under our operational control and for calendar year 2020. Additionally, all currency references are in US dollars.

Values in charts and tables may not sum to the total amounts shown due to rounding.

## Internal and External Assurances

We recognize the importance of providing our stakeholders with complete and accurate data and information, and have therefore taken the following steps in reviewing the content quality of this report:

- **Internal assurance** – We streamlined our data collection activities into an internally developed information system with built-in internal control measures. Additionally, this report was reviewed by a cross-functional management team, subject matter experts and the executive team, as well as the Health, Safety, Environment and Corporate Responsibility (HSE&CR) Board Committee.
- **External assurance** – We engaged ERM Certification and Verification Services (ERM CVS) to conduct an independent assurance of our absolute 2020 total Scope 1 and Scope 2 GHG emissions. For ERM CVS’s Independent Assurance Statement, please see page 73.

## Restatements

As we improve our sustainability reporting year on year, we note that it may be necessary to restate our data. Reasons for restatements could include changes in reporting boundaries, metric definitions or calculation methodologies, or other reasons. For the sake of transparency, we will highlight the restated items and reasons for restatement if we believe it would be meaningful information.

In this year’s report, in compliance with IPIECA guidance and “The Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard (Revised Edition),” we restated our 2019 greenhouse gas (GHG) emissions data to reflect the divestiture of our Malaysia business. Since 2019 is the base year for our GHG emissions performance and the Malaysia operations accounted for more than 30% of that year’s total reported GHG emissions, we have removed Malaysia from the data. No other restatements were made beyond GHG emissions, as the impact was deemed immaterial.

## Key to Abbreviations

<b>BBL</b>	Barrel
<b>CO<sub>2</sub>e</b>	Carbon Dioxide Equivalent
<b>MMBOE</b>	Million Barrels of Oil Equivalent
<b>MMBTU</b>	Million British Thermal Units
<b>MBOEPD</b>	Thousand Barrels of Oil Equivalent per Day
<b>mg/L</b>	Milligram per Liter

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# Message to Our Stakeholders

This past year was historical in a multitude of ways, from the global COVID-19 pandemic to the sharp decline in oil prices. All the while, investors were looking to oil and natural gas companies for more environmentally focused leadership and behaviors and overall better corporate citizenship.

I am pleased with the steps our company took in 2020; our team rose to the challenge, helping us to continue to be an industry leader. While we pulled back our drilling due to market conditions, we were able to operate within the reduced budget and maintain schedules on significant, long-term projects. Further, our team took advantage of the opportunity to review current practices and adjust to become a more sustainable, responsible company going into 2021.

## Enhancing Disclosures and Accountability

We expanded the disclosures included in this 2021 Sustainability Report as part of our adoption of five key reporting principles: relevance, transparency, consistency, completeness and accuracy. Based on our engagement with stakeholders, we have identified additional areas to report, including an expanded TCFD-aligned scenario analysis, Scope 3 emissions and Equal Employment Opportunity (EEO-1) diversity data. As part of our commitment to transparency, we are seeking third-party assurance of our 2020 Scope 1 and Scope 2 GHG absolute emissions.

Further, we have begun mapping our ESG efforts and priorities to the 17 United Nations Sustainable Development Goals, as we strive to achieve a more sustainable future. Our focus lies primarily on four of these goals – quality education, affordable and clean energy, decent work and economic growth, and climate action – since we believe we have the greatest impact in these areas.

The Board of Directors and executive team at Murphy have worked tirelessly to reexamine the organization and introduce tangible change. As detailed in the Board and Managerial Oversight of ESG Topics section, our Board and executive-level committees have identified and incorporated ESG responsibilities into their roles. In 2020, we created a new Director of Sustainability role to coordinate the company's ESG efforts.

## Updating Climate Change Position, Lowering Emissions

Our stakeholders are increasingly focused on climate change and emissions reduction, and so are we. In 2021, we updated our climate change position, we are assessing net-zero emissions pathways and we formed a sustainability-focused engineering team.

In 2021, we set a goal of achieving zero routine flaring by 2030. This adds to our established GHG emissions intensity reduction target of 15% to 20% by 2030 from our 2019 level, excluding our previously owned Malaysia operations. For our 2021 compensation plan, we added a GHG emissions intensity reduction target metric to the already established safety and spills metrics.

Murphy has also implemented operational changes and best available technologies to reduce GHG emissions. For example, in our Canadian operations we shifted to a dual-fuel frac fleet across all onshore operations, replacing diesel with natural gas, which is sourced from the field when possible. We will be testing similar technology with a dual-fuel drilling rig in our Tupper

Montney drilling program in 2021. Further, our new Tupper Montney facilities are designed without flare stacks, so that wells are automatically shut in rather than utilizing an emergency flare. While these projects have notably reduced our environmental impact, they have also achieved a reduction in costs.

## Reducing Our Environmental Footprint

We recognize that emissions are only one element of our total environmental footprint. Protecting water resources is also an important factor in our overall sustainability efforts.

For the Tupper Montney asset, we have collaborated with microbiological specialists to advance produced saline water treatment technology by testing an experimental bacterial water treatment. Initial results have been promising, and with additional research, this technology may reach commercial viability and become widely adopted within the oil and natural gas industry.

Offshore in the Gulf of Mexico, we optimized our chemical usage, leading to a 74% reduction in chemical treatment volumes in the first quarter of 2021 compared to the 2019 average. This shift also reduced the transfer of supplies, which allowed us to reduce the use of offshore crane lifts and corresponding crane emissions, as well as truck and vessel emissions, further reducing our environmental impacts.

## Sustainability Through Safe Operations

Murphy's commitment to safety remains strong, and so do our actions to protect our workforce and communities. Our employees are our most valuable asset. During the COVID-19 pandemic, we adopted protocols to protect them, their families, and the communities in which we work from the virus. Our strict protocols kept employees and contractors safe, and we had an offshore workforce infection rate of only 2.8%, half the peer average. We also developed a COVID-19 tracking app, providing executives with real-time information on infection rates and close contacts, in order to make decisions regarding our COVID-19 response.

With the rollout of various safety campaigns in 2019 and 2020, we have seen a marked improvement in our safety metrics. Importantly, in early 2020, we launched the Life Saving Rules campaign, which includes the International Association of Oil & Gas Producers' nine rules and an additional rule, Fit for Duty. Murphy also recently began participating in the new lifting and rigging campaign of the Bureau of Safety and Environmental Enforcement (BSEE). Industry crane incidents across the Gulf of Mexico have increased in recent years, and the campaign was launched with the intent to improve awareness and reduce incidents across the industry by a targeted 50% in 2021.

We are including a new safety metric in our 2021 report – Preventable Vehicle Incident Rate – which we are pleased to report has decreased by 30% from 2018 to 2020. Additionally, we highlight the new Process Safety Training Program established in 2020, along with an alarm management program and dashboard, a Management of Change dashboard, and the Global Asset Integrity and Reliability Team, in order to increase collaboration and standardize practices across Murphy operations. Overall, we consistently protected our people and the environment in 2020 and achieved strong safety metrics. These practices have continued into 2021, as we remain spill-free through July 2021.

## Remaining Committed to Our People

Following through on our core value of sharing openly and accurately, we have reviewed our policies on how we conduct business, and introduced a formal Human Rights Policy in 2021. This policy acknowledges our longstanding commitment to the dignity and rights of all people, as well as our resolve to identify and reasonably mitigate the impact our activities may have on human rights in the communities where we do business.

Within the company, we have expanded our diversity and inclusion efforts to include equity as a focus and formed an employee-led Diversity, Equity and Inclusion (DE&I) Committee to provide guidance on navigating what is best for our company and employees. We have expanded our employee benefits, including revised time-off and family-time policies, a new remote work policy and a bonus day to celebrate a personally meaningful day, as we adapt to the changing needs of the general workforce.

## Looking to the Future

I am pleased at the efforts undertaken by Murphy employees in 2020 as they embodied the company's vision of positively impacting lives for multiple generations to come. While oil

demand has improved significantly since we published our 2020 Sustainability Report, we recognize we are facing an energy transition in the future. I believe we are well-positioned to continue producing oil and natural gas in a manner consistent with our commitment to a sustainable path for our business and our communities.

Sincerely,



Roger W. Jenkins  
President and Chief Executive Officer

## ESG Highlights



1 Employee and contractor Total Recordable Incident Rate

2 Employee and contractor Lost Time Incident Rate

3 US onshore operations employee Preventable Vehicle Incident Rate

4 As of June 2021



# Spotlight: COVID-19 Response

COVID-19 presented an intense test – to our industry, to the collective health of all our stakeholders and to our company’s strategy and values. And it is one we passed together. Murphy’s strong culture, capabilities and team helped us navigate the turbulence and lead our industry’s response. All of our people came together to respond to this extremely challenging and stressful time. Their dedication, resilience and resoluteness helped ensure the health and safety of all concerned and enabled us to maintain operations throughout the pandemic.

## Keeping Our People Safe

When the pandemic hit in early 2020, our immediate priority was to ensure the health and safety of our employees and contractors globally, while minimizing interruptions to our business. In early February 2020, we assisted staff and their families in Vietnam and South Korea. While there were many uncertainties and the situation was continuously evolving, we quickly activated our Incident Management Team (IMT), Crisis Management Team (CMT) and Business Continuity Plan to lead our response. Though we did not have a playbook for a pandemic of this severity, we were able to leverage our experience with SARS in 2003 and H1N1 in 2009 in Southeast Asia.

To develop a strong COVID-19-specific response, we sought advice from medical professionals and consultants; followed guidance from the US Centers for Disease Control and Prevention (CDC); and federal, state and local authorities and agencies; and shared experiences openly with peers and partners. We then developed our COVID-19 playbook, which includes plans for remote work for nonessential employees and protocols for returning to the office safely when possible. The Playbook also

includes protocols for keeping our office and field work sites safe, COVID-19 testing, positive case notification and contact tracing. It is continually reviewed and updated as we learn from our experiences, best practices and evolving guidance from the relevant agencies.

Well before they were required to do so by local stay-at-home orders, our IMT and CMT also activated the work-from-home plan, shutting our office locations globally and significantly restricting business travel. This swift, early action likely helped lower exposure and the spread of COVID-19 at the workplace.

Our offshore locations, where staff periodically rotate in and out of remote, confined, shared living quarters, are particularly vulnerable. We developed a CV-19 Mitigation Plan, which was submitted to the BSEE and was used as a baseline for the pandemic-based risk inspections held with other operators in the Gulf of Mexico. Murphy was the first operator in the Gulf of Mexico to have all facilities designated at the Offshore Operators Committee’s Level 3 status, which meant that we



were testing every individual prior to flying them offshore. Our testing procedure has kept our offshore personnel safe and healthy during regular crew changes and through the multiple evacuations due to the record-setting hurricane season in 2020.

Our Information Technology (IT) team worked swiftly to ensure that our staff could work remotely. This included developing creative ways to support a smooth, rapid adoption of Microsoft Teams, scaling up in-place security protocols, providing hardware equipment to allow for efficient and effective home set-up, and to ramp up IT Service Desk support. In addition, the Data Science team built an internal COVID-19 intranet site and dashboard by ZIP code to help our employees track and predict outbreaks and prepare appropriately. As on-site activities started-up, the team built a Health Screening and Site Tracker mobile app for contact-tracing purposes.

To support the mental, emotional and physical well-being of our employees, we offered mental health webinars and wellness resources as well as telemedicine tools. Our Human Resources team surveyed our staff to ensure that programs were meeting their needs and expanded benefit plans to provide coverage for COVID-19 testing and other related items. Additional benefit enhancements included amending our Vacation Policy to allow eligible employees to roll over a week of vacation each year and a Telecommuting Policy to allow employees to work up to two days per week from home. In 2021, we secured access to vaccines for our offshore crews, the Houston office staff and their families.

To alleviate the feelings of anxiety, isolation and uncertainty we all faced, the management team committed to communicating as openly and frequently as possible, and to supporting and providing flexibility to accommodate individuals' needs. Communication channels included periodic company and department townhalls, weekly communications providing COVID-19 updates, COVID-19 resources and dashboards, and multiple Q&A sessions with medical experts. To recreate the sense of belonging that is difficult to achieve when working remotely, our strong network of employees found creative ways to support each other and held virtual events to maintain connectivity, positivity and morale. We provided resources for managing remotely and keeping teams engaged.

As part of the return-to-work plan, all staff received face masks, hand sanitizer and disinfecting wipes, to minimize potential exposure in our global offices. We established a regular deep-cleaning schedule, offered cleaning stations on every office floor and followed social distancing guidelines for cubicle layouts and monitored occupancy rates. We installed social-distancing and personal hygiene guidelines, and reminder graphics were physically installed in all common locations and displayed on our intranet and digital signage.

Our industry-leading testing and safety protocols have proven very effective, and we continually review and adjust them as needed to protect our people.

## Committed to Our Stakeholder Community

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We have also worked to support our stakeholder community during the pandemic. For example, we partnered with vendors and contractors, communicating with them early and frequently and applying to them the same COVID-19 screening, contact-tracing requirements and other field and travel policies.

To support the communities in which we live and work, we continued with company gift matching and our longstanding charitable commitment to the United Way and El Dorado Promise

in Arkansas, and conducted food bank drives for our Houston communities. We donated surplus computers to enable remote learning for Houston-area students.

Despite the advances in vaccination and testing, COVID-19 is still very much with us. Across the board, our commitments to keeping all our stakeholders safe and healthy will endure, and will continue to evolve in the spirit of continuous improvement.

# Who We Are

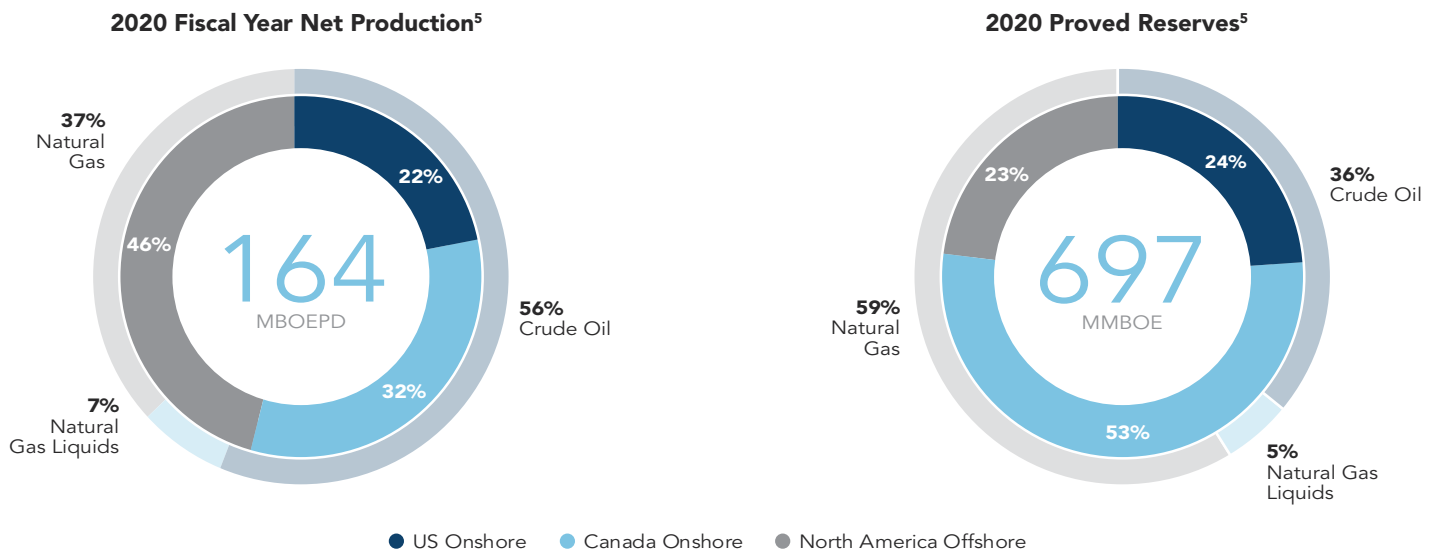
Murphy Oil Corporation is an independent exploration and production company with onshore and offshore oil and natural gas production operations in the United States and Canada. We are based in Houston, Texas, and had 675 employees as of year-end 2020.

The company has a rich and storied history dating back to the early 1900s, when our founder, Charles Haywood Murphy Sr., envisioned becoming an industry leader – first in lumber and banking, and ultimately in oil and natural gas. The company was incorporated in 1950 and has been publicly listed since 1956.

From the outset, we have remained committed to the highest standards of social and environmental performance in all

our operations. Murphy’s [Worldwide Health, Safety and Environmental \(HSE\) Policy](#) provides clear and consistent direction: to comply with environmental laws and standards and create safe and rewarding workplaces while making positive contributions to the community. The combination of our commitment and strong operational capabilities makes Murphy a preferred partner in all communities in which we operate, as well as a welcomed partner of both independent and national oil companies.

## Production, Reserves and Exploration Footprint



### Exploration Projects



<sup>5</sup> Production and Proved Reserves excludes noncontrolling interest, and represents only the amounts attributable to Murphy.



Our Purpose, Mission, Vision, Values and Behaviors

The world has changed a great deal since the 1950s. But our reason for being – our why – has not. Charles H. Murphy Sr.'s insistence on doing what's right continues to inspire the high standards we set for ourselves in everything we do, including our commitment to our people, communities and the environment.

In 2018, the company, with the support of our Board of Directors (Board), outlined a concrete mission and vision, which is supported by key values or behaviors that guide the way we work every day. Throughout this report, we highlight ways in which we are living these values as part of our commitment to ESG excellence.

### OUR PURPOSE

We believe in providing energy that empowers people.

### OUR MISSION

We challenge the norm, tap into our strong legacy and use our foresight and financial discipline to deliver inspired energy solutions.

### OUR VISION

We see a future where we are an industry leader who is positively impacting lives for the next 100 years and beyond.

### OUR BEHAVIORS

#### DO RIGHT ALWAYS

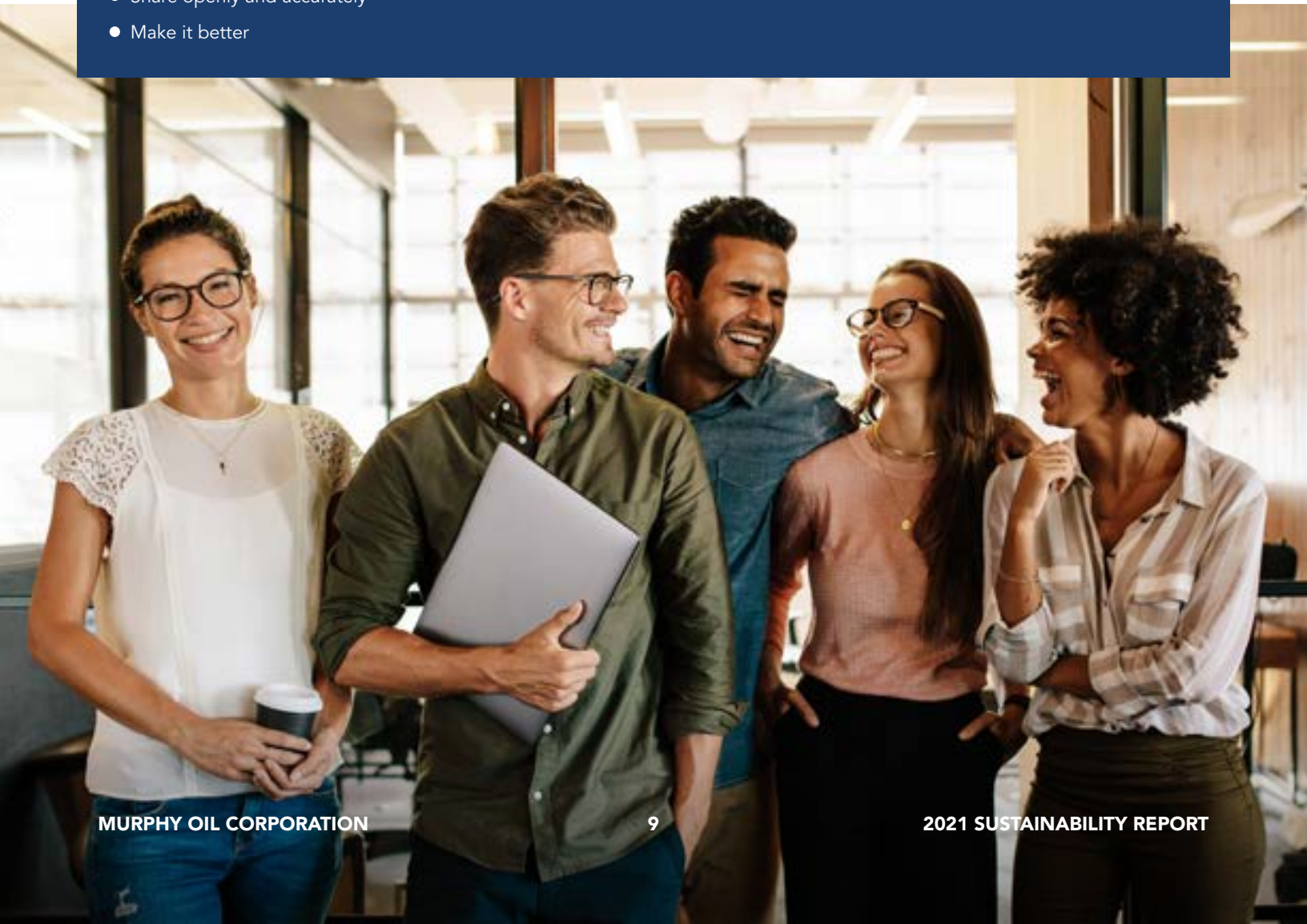
- Respect people, safety, environment and the law
- Follow through on commitments
- Share openly and accurately
- Make it better

#### STAY WITH IT

- Show resilience
- Lean into challenges
- Support each other
- Consider the implications

#### THINK BEYOND POSSIBLE

- Offer solutions
- Step up and lead
- Don't settle for "good enough"
- Embrace new opportunities



# Our Approach to ESG

Murphy is built on operating responsibly and protecting our workforce, communities and the environment. While we know this is good for the planet and our stakeholders, we also know it is critical to our success as a business.

Long before environmental, social and governance – or ESG – was a concept driving companies’ and stakeholders’ strategies and decision-making, our company’s founder, Charles H. Murphy Sr., built his company on a strong commitment to integrity and doing what is right for our employees, communities and stakeholders. His son, Charles H. Murphy Jr., was a forerunner in the environmental awareness movement, and his tireless efforts helped to create standards and practices for the oil and natural gas industry. They recognized that protecting and conserving the environment, investing in our people and communities and protecting the health and safety of our workforce aren’t only the “right” things to do, they also underpin our financial stability and support our ongoing license to operate and sustain long-term value creation.

Our approach to ESG is shaped by our deep, rich heritage and values.

As illustrated in the graphic below, our approach to ESG is based on five principles, which guide the way we work every day.



## Responding to Climate Change Is Central to Our ESG Efforts

Today, climate change is at the center of most discussions of ESG issues, and we recognize that it is one of the most pressing issues in our business. Addressing climate change, and the global energy transition it requires, also presents important risks and opportunities for our industry and our company. We believe our longtime commitment to operating responsibly and using resources efficiently – coupled with our environmentally advantaged portfolio – position us to meet the challenges and seize the opportunities of the energy transition so we can remain an industry leader for years to come. To guide our efforts, we developed climate change principles in 2008, which we reviewed and updated again in early 2021. While we have made progress, we are currently assessing

pathways to net-zero emissions and expanding on our existing emissions reduction goals. Read more about our approach to climate change and emissions reductions in the Environmental Protection and Conservation section (see page 15).



### Our Climate Change Position

Find out more about our [climate change position](#) on the Murphy Oil Corporation website.

## Focusing on What Matters Most

We are continually advancing our comprehensive approach to managing the range of ESG impacts, risks and opportunities Murphy faces. The following graphic illustrates our core ESG focus areas, and we continue to move our programs and performance forward on these key issues.

Understanding our most important ESG impacts, challenges, risks and opportunities is a central foundation for our ESG strategy and reporting. To help determine the key sustainability topics to focus on, we conduct a materiality assessment annually using the process prescribed by IPIECA/API/IOPG. For the purposes of our sustainability reporting, we have adopted IPIECA/API/IOPG's definition of "material" as outlined in "Sustainability Reporting Guidance for the Oil and Gas Industry, 4th Edition, 2020:" "Material issues are those that – in the view of both management and external stakeholders – have the potential to significantly affect a company's sustainability performance and stakeholder awareness, assessments or decisions."

Our materiality assessment process includes the following steps:

- **Identify issues** – We list existing and emerging issues relevant to our company and stakeholders. Sources include stakeholder engagements, enterprise risk management process, SASB's Materiality Map, peer benchmarking and ESG rating agencies.
- **Prioritize issues** – We then rank the identified issues based on level of impact to the company, as well as level of concern to key stakeholders.
- **Check and confirm issues** – Prior to publishing, we review this report to ensure that the identified material issues are discussed adequately and appropriately.
- **Disclose the process and outcomes** – In the interest of transparency, in this report we outline our materiality assessment approach and outcomes. See graphic at right for this year's outcomes.

- **Review the process** – Upon publication of this report, we reach out to key stakeholders for feedback as to whether the report sufficiently addressed their issues of concern, and to identify areas of improvement and, where appropriate, make improvements.

Based on this analysis, we identified 10 ESG issues of greatest importance to our stakeholders and our company.

### Our ESG Focus Areas

#### ENVIRONMENT

- Climate change, including energy transition and scenario analysis
- Greenhouse gas emissions, including Scope 3
- Water management
- Biodiversity

#### SOCIAL

- Employee and contractor health and safety
- Diversity, equity and inclusion
- Human capital management
- Community engagement

#### GOVERNANCE

- Stakeholder engagement
- Political contributions and lobbying activities

## Engaging Our Stakeholders

We view our stakeholders as important partners. We engage with our employees, investors, the communities where we work and live, government and regulatory agencies, thought leaders, academics, and nongovernmental organizations through:

- **Direct channels** such as focus groups and interviews, investor roadshows and outreaches, proxy voting and meetings.
- **Indirect channels** such as webinars, forums and panel discussions, professional networks and our website.

To identify key stakeholders, we conduct a mapping process in which we prioritize stakeholders that are willing to engage with us. Maintaining and building these relationships are important

to us; we use their input to guide, improve and/or formalize our internal policies.

For more information on our shareholder engagement process, please see our [2021 Proxy Statement](#).

We are committed to improving the relevancy and transparency of our public disclosures on matters that are key to our stakeholders. These disclosures include our Annual Report, Proxy Statement and Sustainability Report, certain questionnaires and our website. Stakeholder engagements occur throughout the year, and we consider post-publication feedback as we plan the next report.

### Contributing to the UN Sustainable Development Goals

Our purpose as a company – to provide energy that empowers people – is an important element of sustainable development. This year, we began an effort to map our ESG efforts and priorities onto the United Nations Sustainable Development Goals (SDGs), which provide a blueprint to achieve a better and

more sustainable future for all through action for social inclusion, environmental sustainability and economic development. Meeting the SDGs by 2030 will require the private sector, including our company, to work alongside governments, nongovernmental organizations and communities.



While we understand that the 17 SDGs are inextricably linked, we believe we have the most impact on the following SDGs:

- **Goal 4** – Quality Education
- **Goal 7** – Affordable and Clean Energy
- **Goal 8** – Decent Work and Economic Growth
- **Goal 13** – Climate Action

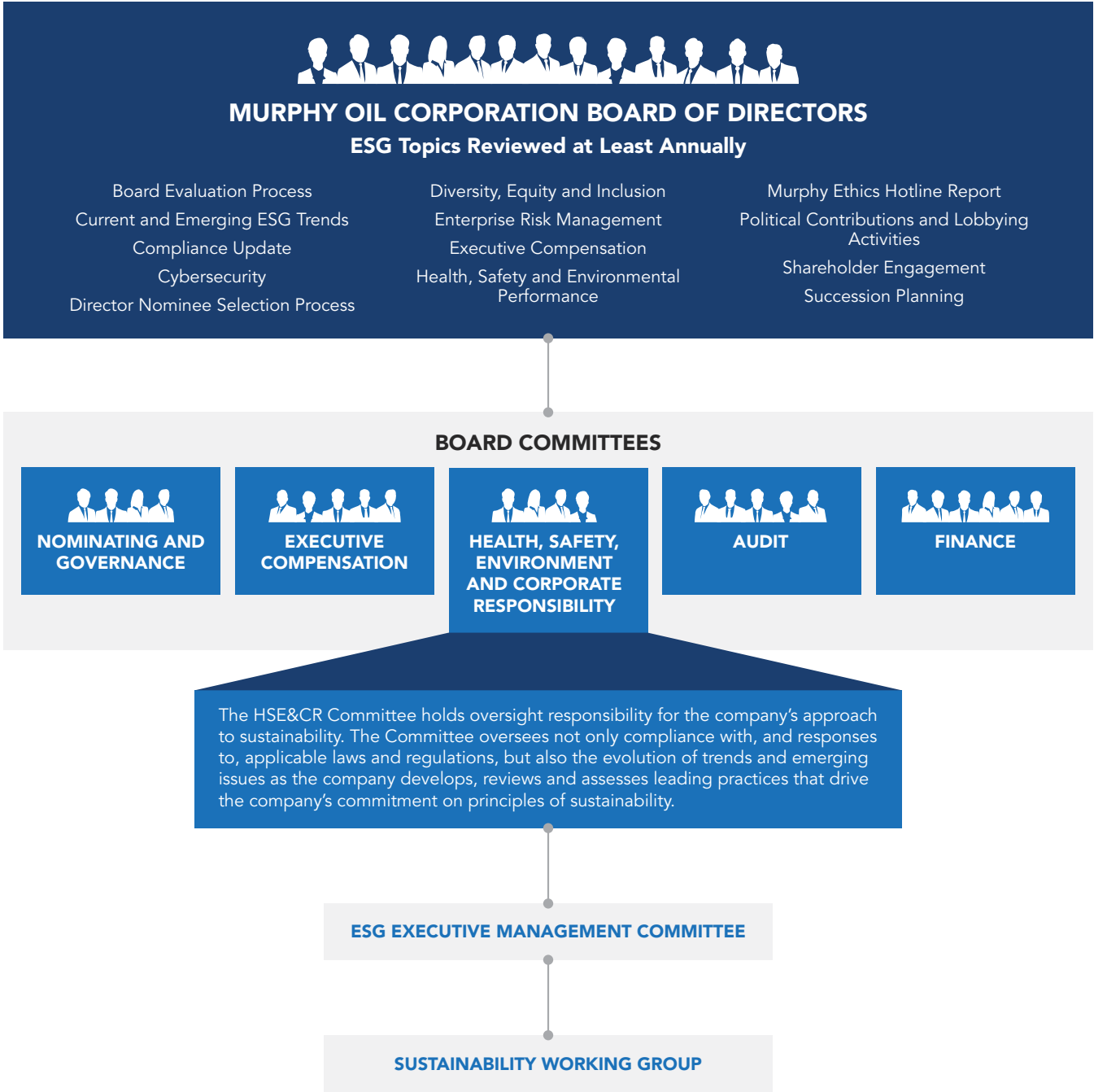
A content index detailing how we contribute to the SDGs can be found on page 85.

Board and Managerial Oversight of ESG Topics

Board and senior management commitment, coupled with strong governance systems and clear delineation of responsibilities and accountability, are critical to effectively managing our ESG risks, opportunities and performance. ESG issues are a formal part of every Board meeting. Furthermore, the Board is responsible for overall risk oversight of the company, which includes certain environmental, social, supply chain and governance matters.

Four of our Board committees have oversight for some ESG issues. The Health, Safety, Environment and Corporate Responsibility (HSE&CR) Committee leads the Board’s oversight of sustainability issues and strategy development.

For more information, please refer to our [website](#).





**ESG Executive Management Committee**  
In 2019, the company formalized the process by which we monitor and manage sustainability risks and opportunities, by establishing an ESG Executive Management Committee.

The primary responsibilities of the committee are:

- Ensure the company has timely and accurate information regarding laws, regulations and industry trends related to ESG matters, including climate, responsible business conduct, the community, and diversity, equity and inclusion
- Monitor and advise the company on current and emerging ESG matters, including risks and opportunities, that may affect the business, operations, performance or public image of the company or are otherwise pertinent to the company and its stakeholders
- Assist the HSE&CR Board Committee or other Board Committees with respect to ESG matters

- As necessary, review and provide comments to the company regarding policies, reports and communications regarding ESG-related matters
- Review and provide comments on the company's sustainability reports

The ESG Executive Management Committee is required to meet at least quarterly and reports to the HSE&CR Board Committee. The committee has delegated the responsibility of producing the annual sustainability report to the Sustainability Working Group. Further, the committee may delegate other responsibilities to other working groups or subcommittees.

**Sustainability Working Group**

The Sustainability Working Group is a cross-functional team of subject matter experts that manages and coordinates the publication of our annual sustainability report as well as other ESG matters, as directed by the ESG Executive Management Committee.

<b>ESG Executive Management Committee</b> Reports to HSE&CR Board Committee Chaired by President and Chief Executive Officer  <b>Current members:</b> President and Chief Executive Officer Executive Vice President and Chief Financial Officer Executive Vice President, Operations Senior Vice President, General Counsel and Corporate Secretary Senior Vice President, Technical Services Vice President, Human Resources and Administration Vice President, Investor Relations and Communications Director, Governance and Legal Services Director, Sustainability	<b>Sustainability Working Group</b> Reports to ESG Executive Management Committee Chaired by Director of Sustainability  <b>Comprised of representatives from the following business units:</b> Finance and Treasury Health, Safety and Environmental Human Resources Investor Relations and Communications Law Operations Risk Management Supply Chain Management
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See the Governance and Responsible Business Practices section (page 59) for more on our approach to other governance issues.

**Safe, Responsible Operations**

We are committed to conducting our business in a manner that protects and conserves the environment and that protects the health, safety and security of all personnel. For further details, please see the Environmental Protection and Conservation (see page 15) and Protecting Our People (see page 41) sections of this report.

**Communicate with Transparency**

We believe that communicating our ESG commitments, plans and progress is key to enhancing our business, improving operations and strengthening our credibility with our stakeholders. Our efforts in this regard are outlined in About This Report (see page 2).

# Environmental Protection and Conservation



**Protecting and preserving the environment is a deep-rooted principle for everyone at Murphy.”**

Murphy has a long history of conducting our business in a manner that protects and conserves the environment. This commitment is embedded in the way we have structured our portfolio of assets, developed our strategy, and implemented continuous improvements in our operational processes.

Protecting and preserving the environment is a deep-rooted principle for everyone at Murphy, starting with our founder, [Charles H. Murphy Jr.](#) He was an early leader in the environmental awareness movement and helped to create environmental standards and practices for the oil and natural gas industry. Mr. Murphy was honored with the National Wildlife Federation's citation for outstanding individual service for his work in bringing together oil industry leaders and national leaders of the environmental movement. In 1999, he became the first oil industry executive to receive the prestigious Chevron Conservation Award.

We have integrated this thinking into our strategy. Over the past decade, we have transformed the company into a focused E&P player. This transition has made our business more sustainable and significantly reduced our emissions footprint. In June 2019, we acquired primarily operated deepwater US Gulf of Mexico assets, and, in July 2019, we fully divested our operations in Malaysia. Through these transactions and by divesting assets in

refining, oil sands and heavy oil, we have reduced our exposure to emissions-intensive activities. Now, unconventional assets in Canada, which has some of the world's most comprehensive environmental regulations, and the US Gulf of Mexico, which can deliver barrels with some of the lowest emissions in the industry, account for a larger share of our operations.

At the tactical level, Murphy continually seeks to improve the performance of existing assets by making significant investments in equipment upgrades and new technology, to monitor, measure and improve our environmental performance. Our environmental initiatives are directed by our [Worldwide Health, Safety and Environmental Policy](#) and implemented according to our comprehensive HSE Management System (see page 43). We focus on reducing greenhouse gas (GHG) and other air emissions, increasing energy efficiencies, protecting water resources and ecosystems, and managing waste and land impact.

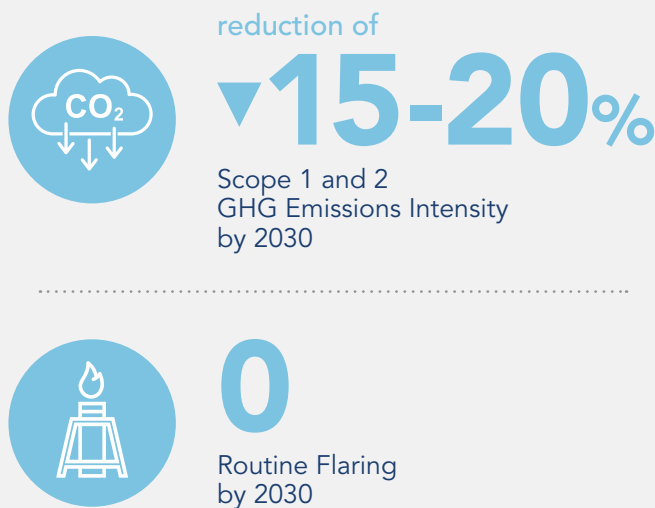
## Climate Change and Emissions

We understand that our industry, and the use of our products, create emissions – which raise climate change concerns. At the same time, access to affordable, reliable energy is essential to improving the world's quality of life and the functioning of the global economy. We believe that as the energy economy transitions under the Paris Agreement, oil and natural gas will continue to play a vital role in the long-term energy mix.

At Murphy, we are committed to reducing our GHG emissions, and focused on understanding and mitigating our climate change risks. To guide our climate change strategy, Murphy has adopted a [climate change position](#), and we are setting meaningful emissions goals. In 2021, we endorsed the Texas Methane & Flaring Coalition's goal of eliminating routine flaring by 2030, under the current World Bank definition of routine flaring. We have also committed to reduce our Scope 1 and 2 GHG emissions intensity by 15% to 20% by 2030 against a 2019 baseline, excluding the Malaysia operations, which we divested in 2019. As we continue to capture, track and improve our reporting of methane and flaring metrics, we also intend to introduce methane intensity and flaring intensity external targets by the end of 2021.

In this section, we share our efforts to improve our emissions performance and our climate governance, strategy, risk identification and management and metrics and targets, in alignment with the Task Force on Climate-related Financial Disclosures (TCFD) core elements.

### Our Climate and Emissions Goals





## Core Elements of Recommended Climate-related Financial Disclosures



Source: [www.fsb-tcfd.org](http://www.fsb-tcfd.org)

### Governance

The organization's governance around climate-related risks and opportunities

### Strategy

The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning

### Risk Management

The processes used by the organization to identify, assess and manage climate-related risks

### Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

## Transparent Emissions Reporting

Murphy is committed to transparently reporting, as well as reducing, our GHG emissions. We have maintained an inventory of GHG emissions since 2001, and we have included this GHG data in all of our sustainability reports. We prepared an internal, annual Worldwide GHG Emissions Report from 2001 through 2017, and have continually refined our emission surveys as we strive for improved measuring and tracking. We report emissions on an operated basis per IPIECA/API/IOGP "Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, Second Edition," and in accordance with regulation of the following local countries and provinces:

- **United States** – Environmental Protection Agency (EPA) GHG Mandatory Reporting Rule
- **Canada (British Columbia)** – Greenhouse Gas Industrial Reporting and Control Act: Greenhouse Gas Emission Reporting Regulation, British Columbia Reg. 249/2015, with submission through the Government of Canada's Greenhouse Gas Reporting Program (GHGRP)
- **Canada (Alberta)** – Specified Gas Reporting Regulation with submission through GHGRP

- **Canada (Federal)** – GHGRP
- For other overseas operations, a simplified version of EPA's reporting created for our GHG inventory was used
- Where necessary, additional source types were added to all assets (e.g., indirect emissions) for consistency across the inventory

For sustainability reporting purposes, we include all drilling and completions emissions from contracted activities in our Scope 1 data disclosure. In 2017, we established internal annual GHG emissions targets for our operating business units, which are reset every year. In 2020, we committed to reducing our emissions intensity further by setting a 2030 reduction target of 15% to 20% below our 2019 levels, excluding Malaysia. As previously noted, in 2019, we fully divested our Malaysia business. As described in the About This Report in the Introduction Section (see page 2), we have thus restated our 2019 emissions data to exclude Malaysia, since it is the baseline year to track against the 2030 emissions intensity reduction target.

## GHG Emissions Definitions

We have adopted the following definitions for our GHG reporting, based on the [Greenhouse Gas Protocol](#).

**Scope 1** – Direct GHG emissions from sources owned and controlled by Murphy

**Scope 2** – Indirect GHG emissions from the generation of purchased electricity consumed by Murphy

**Scope 3** – All other indirect GHG emissions as a consequence of Murphy's activities, from sources not owned or controlled by the company

## Improving Our Emissions Performance

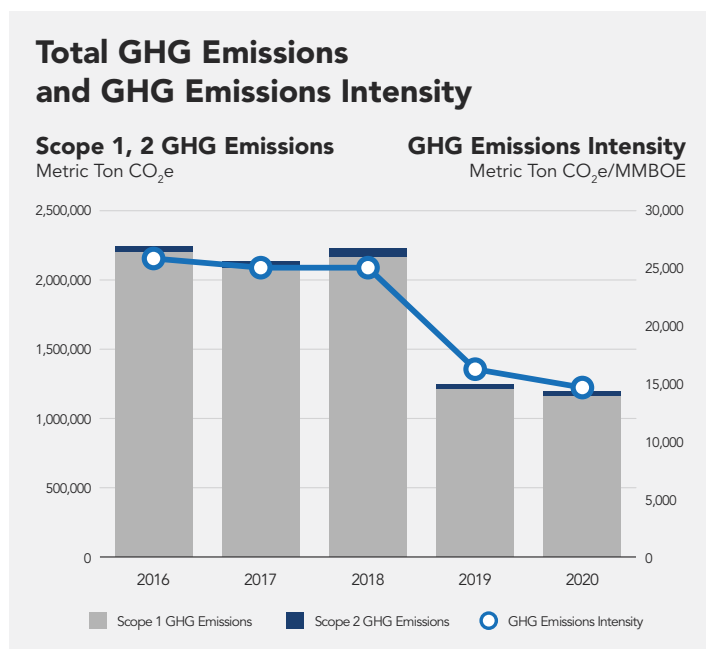
We focus our efforts on reducing emissions generated from combustion sources and processes that emit predominantly methane.

We have made significant investments to reduce GHG and other emissions, spending approximately \$100 million from 2015 to 2020. Reducing emissions is a top priority across all our business functions. We follow a rigorous preventative maintenance program to keep operations running clean and efficiently, and our operations and facility design teams work collaboratively to incorporate GHG reduction technologies and practices into our existing operations, as well as new facilities. We have also established internal technical sharing sessions to communicate best practices and provide a forum to evaluate applicability

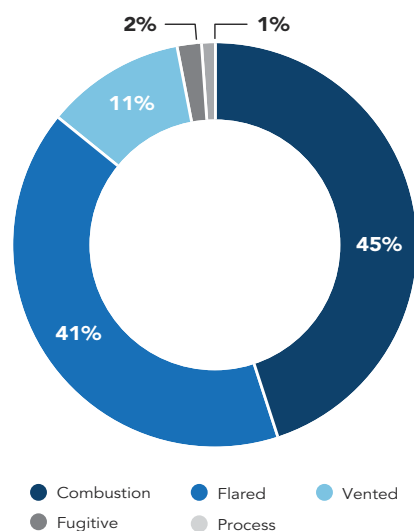
across our business units and functions, including asset operations, engineering, subsurface, drilling and completions, and environmental specialist functions.

We have made strong progress in reducing our emissions. Between 2016 and 2020, our total Scope 1 and Scope 2 emissions fell by 47%, and total company GHG emissions intensity decreased by 43%. When excluding Malaysia, which we divested in 2019, the intensity reduction is still substantial, at 30% from 2016 levels. Our emissions intensity decreased by about 10% from 2019 to 2020, putting us on a clear path to achieving our goal of reducing emissions intensity by 15% to 20% by 2030 against a 2019 baseline. We continue to focus on implementing emissions-reducing initiatives to ensure the reductions are sustainable under future increased activities.

GHG Emissions and GHG Emissions Intensity	2016	2017	2018	2019	2020
Scope 1 and Scope 2 GHG Emissions Metric Ton CO <sub>2</sub> e	2,253,341	2,140,553	2,225,724	1,250,320	1,200,884
GHG Emissions Intensity Metric Ton CO <sub>2</sub> e/MMBOE	25,777	25,124	25,912	16,234	14,662



### Distribution of 2020 Scope 1 GHG Emissions



## DON'T SETTLE FOR "GOOD ENOUGH"

### Continuous Optimization

Our investment in electric cranes on the King's Quay floating production system, to be installed in the US Gulf of Mexico in 2022, will reduce emissions by over 92 metric tons of carbon dioxide equivalent (mtCO<sub>2</sub>e) each year, or ~2,800 mt CO<sub>2</sub>e over the life of the field. This is equivalent to a pickup truck

driving over 6 million miles,<sup>6</sup> or the annual energy consumption of 370 US homes.<sup>6</sup>

At our Delta House facility, we optimized our vessel usage, reducing our emissions by 41% from 2019 to 2020, a reduction of 255,000 gallons of fuel annually.

<sup>6</sup> Based on data from [www.fueleconomy.gov](http://www.fueleconomy.gov) and [www.ccfpd.org](http://www.ccfpd.org)



### Improving Our Emissions Performance: Methane

Methane has a significant impact on the climate, due to its high Global Warming Potential (GWP). As a result, the company is targeting efforts to reduce methane emissions and has built redundant pipelines to minimize flaring due to downstream third-party constraints and invested in technologies that reduce venting and fugitive emissions, including:

- Electrification of facilities, pumping units and instrument air compressors
- Replacing high-bleed pneumatic controllers with fuel gas to low-bleed and instrument air-actuated controllers at well sites and facilities
- Solar-powered chemical pumps and batteries
- Process efficiencies to reduce venting and flaring
- Pipeline infrastructure to reduce venting and flaring at legacy assets
- Leak detection and repair (LDAR) – utilize forward-looking infrared (FLIR) cameras to reduce methane leaks by routine monitoring and repairing

We continue to seek improvements to reduce our methane emissions. In 2021, we intend to introduce an external target for methane intensity.

### Improving Emissions Performance: Combustion

A large source of emissions across our operations is associated with the combustion of fuel to run equipment critical to our operations. Improving the efficiency of our combustion practices reduces associated GHG emissions, as well as emissions of nitrogen oxide (NO<sub>x</sub>), sulfur oxide (SO<sub>x</sub>) and volatile organic compounds (VOCs). Strategies we are using to reduce combustion-related emissions include:

- **Dual-fuel fracturing fleet** – In the fourth quarter of 2019, Murphy shifted exclusively to a dual-fuel fracturing fleet in Canada, which displaces diesel consumption with natural gas (field gas where readily available, or combustible natural gas). This is expected to reduce both GHG and NO<sub>x</sub> emissions. In Canada, Murphy also conducted trials of a dual-fuel drilling rig in its 2021 drilling program in Tupper Montney, further displacing diesel consumption with natural gas and driving down emissions. In the Eagle Ford Shale in Texas, Murphy started using dual-fuel fracturing fleets for its 2021 completions and is currently evaluating the use of electric fracturing units.
- **Reducing truck transportation** – We have reduced truck transportation by connecting production in our operating fields via pipelines whenever practical and cost-efficient, and utilizing lay-flat hose to transport fresh water and high-density polyethylene (HDPE) pipelines to move fresh water and non-fresh water through the field, where applicable.

We will continue to seek opportunities to partner with service providers on emission-reducing innovations.

## Benchmarking Methane and Other GHG Emissions of Oil and Natural Gas Production in the United States

In 2021, M.J. Bradley & Associates, an ERM company, developed a **US oil and natural gas emissions benchmarking report** for Ceres,<sup>7</sup> with the Clean Air Task Force<sup>8</sup> contributing to the scope and development. The data was sourced from the EPA, in compliance with the Greenhouse Gas Reporting Program.

This report found that of 295 onshore oil and natural gas producers in the US that report emissions data, the top 100

were responsible for approximately 80% of total reported methane and GHG emissions in 2019.

While Murphy is the 83rd-largest US onshore producer, the company is in line with the midpoint of producers for Natural Gas Sustainability Initiative (NGSI) methane intensity. Further, Murphy ranked 70th for GHG intensity, with 100 being the lowest emissions intensity, thus placing it near the top quartile for lowest GHG intensity.

<sup>7</sup> Ceres is a nonprofit organization working to solve the greatest sustainability challenges.

<sup>8</sup> Clean Air Task Force, <https://www.catf.us/>

### Improving Emissions Performance: Flaring

Flaring of natural gas is a controlled process for eliminating emissions of methane and VOCs, which is necessary for safe operations within the oil and natural gas production process. Murphy is committed to limiting flaring as much as possible at all of our locations, to protect the environment and to capture as much natural gas as possible. Our first choice is always to eliminate flaring through natural gas conservation. Per the US Bureau of Safety and Environmental Enforcement (BSEE) regulations, we conduct zero routine flaring at our Gulf of Mexico offshore facilities. In 2021, we endorsed the Texas Methane & Flaring Coalition's goal of eliminating routine flaring by 2030, under the current World Bank definition of routine flaring.

Our process improvements to reduce flaring include:

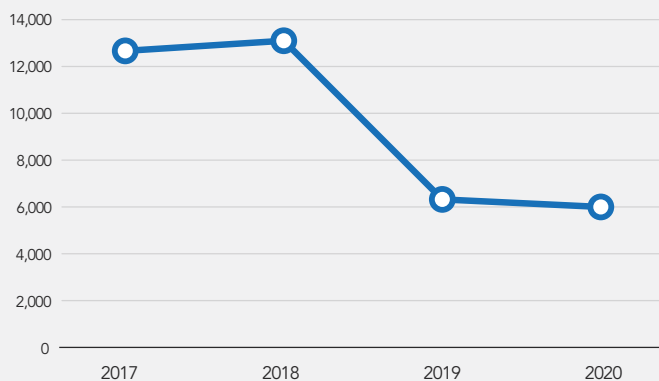
- Eliminating flare stacks from the design of new facilities in our Tupper Montney operations. The new designs use automated pressure controls to shut the wells in automatically, to eliminate flaring.
- Implementing facility slugging prevention projects to reduce process fluctuations and upsets
- Reducing export constraints through the addition of secondary natural gas sales points
- Introducing electronic control upgrades to reduce upsets and provide data for continuous operational improvement
- Increasing our overall equipment performance to drive down the upset conditions that cause flaring
- Extending our operated flowline and pipeline network and utilizing third-party underutilized pipelines and infrastructure, where possible, to increase natural gas handling capabilities and reduce flaring

These efforts will drive improvement in our management of emissions and climate-related risk exposure, reduction of regulatory and policy risk and responsible production of oil and natural gas.

Between 2017 and 2020, our flaring performance on a metric ton CO<sub>2</sub>e per MMBOE basis fell by about 53%. As we work to achieve our commitment to reduce flaring, we anticipate continued improvement in the methane intensity of assets under our operational control. Later this year, we intend to introduce an external target for flaring intensity.

#### Flaring Performance

Metric Tons CO<sub>2</sub>e/MMBOE



### Committing to Emissions Reductions and Industry Partnership

Murphy is one of the 26 founding members of [The Environmental Partnership \(EP\)](#), launched by the API in 2017. The Partnership, which includes 65 participating oil and natural gas producers, is focused on voluntarily reducing emissions from oil and natural gas production through a series of best practices that members commit to implementing. As a member, Murphy has committed to and is working to achieve the following:



THE  
ENVIRONMENTAL  
PARTNERSHIP

- **Implementing leak detection and repair (LDAR) programs** at all relevant assets, including regular optical gas imaging and timely repair of identified leaks
- **Replacing high-bleed pneumatic controllers** – so far, we have eliminated 90% of these controllers in our US onshore operations, primarily replacing them with air-actuated devices
- **Reducing emissions from pipeline blowdowns** – we reduce pressure and gas volumes prior to pipeline blowdowns, and when possible, route gas to flare for destruction, to reduce emissions
- **Flaring-reduction best practices** – we follow a range of flaring best practices (see Improving Emissions Performance: Flaring above)

Scope 3 Emissions

Scope 3 emissions are other indirect emissions as a result of Murphy's activities, from sources not owned or controlled by the company. As an exploration and production company, we have no direct control over Scope 3 emissions, in contrast with fully integrated energy companies that offer a full range of energy products and services directly to consumers.

We use the guidance prescribed in the "Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions: Overview of Methodologies," published by IPIECA in 2016, to

estimate our Scope 3 emissions. The "GHG Protocol Scope 3 Standard," published by the World Resources Institute and the World Business Council for Sustainable Development in 2011, classifies Scope 3 emissions into 15 categories. In establishing the boundary of our Scope 3 inventory, we have determined that only one of the 15 categories is material to our GHG inventory, Category 11: Use of Sold Products. We will continue to evaluate the other categories for materiality and report accordingly.

The table below outlines our estimated Scope 3 emissions for 2020, on a net equity production basis.

Estimated Scope 3 Net Equity Emissions	2020
Category 11: Use of Sold Products Million Metric Tons CO <sub>2</sub> e	20.6

Climate Governance

Our Board and senior management are actively engaged in overseeing our climate change and emissions strategy.

Board Oversight

The Board of Directors actively oversees climate-related risks and opportunities, and the executive team in its assessment, agenda-setting and strategic initiatives. Established processes for performance and risk assessments are in place and are informed by experts from within and outside the organization, as well as by the executive team.

The Health, Safety, Environment and Corporate Responsibility (HSE&CR) Committee of the Board has specific responsibility for overseeing issues related to Murphy's climate and emissions strategy and performance. Additionally, the Board has oversight of our Enterprise Risk Management (ERM), and the Executive Compensation Committee aligns our compensation program with our environmental and climate goals as well as performance. Please refer to Board and Managerial Oversight of ESG Topics in the Introduction section (see page 13) for more details on the responsibilities of these Board committees.

Climate-related information is reviewed at least biannually during the HSE&CR Committee meetings, as well as through frequent updates on climate policy from Government Affairs personnel to the Board. Annually, outside experts present to the Board on a broad range of topics relating to climate and sustainability. Additionally, our own internal resources from enterprise risk management, corporate planning, sustainability and HSE provide updates on relevant topics, including but not limited to:

- Strategy and initiatives relating to climate change policy
- Significant legislation or regulations, treaties, conventions or other agreements, public policies or scientific developments involving environmental matters
- Significant risks to, and the physical security of, the company's facilities
- Annual GHG inventory and progress against climate-related goals
- Impact of climate-related risks and opportunities on our long-range business plan and strategy

Management's Role

Our executive team has the knowledge, tools and experience to effectively oversee climate-related risks and opportunities at the company. Our ESG Executive Management Committee, comprised of the President and Chief Executive Officer and senior executives, provides executive direction on and oversees the identification and management of climate-related risks and opportunities, and delegates responsibilities to relevant working groups or teams. To keep abreast of climate-related issues and trends, the committee is briefed by staff who participate in industry associations, think tanks and policy discussions, further detailed under Climate Risk Management (see page 24).

This ESG committee reports to the HSE&CR Committee and coordinates closely with our HSE Executive Management Advisory Committee. The HSE Executive Management Advisory Committee includes the President and Chief Executive Officer and senior executives and management from HSE and Operations, and is responsible for executing on our environmental strategy.

Further, we have a Capital Allocation Investment Committee made up of the President and Chief Executive Officer; Executive Vice President and Chief Financial Officer; Executive Vice President, Operations; and senior finance leaders who oversee capital allocation, including climate- and emissions-related investments.

Additionally, members of the Risk Committee include the Executive Vice President and Chief Financial Officer; Senior Vice President, General Counsel and Corporate Secretary; Executive Vice President, Operations; and other senior executives who identify, prioritize and assign owners to risks, including climate-related risks, with reporting lines up to the Board or applicable Board committee(s), as discussed under Enterprise Risk Management in the Governance and Responsible Business Practices section (see page 61).

## Climate Strategy

Our strategy and asset portfolio position the company to deliver on the dual challenge of providing affordable energy while lowering the intensity of emissions associated with our activities. Through our annual strategic planning process, we build a strategy and business that is resilient to alternative low-carbon pathways, by providing a qualitative and quantitative perspective of energy transition risks and opportunities.

As disclosed in the [Risk Factors of our 2020 Annual Report](#), our risks fall into the following broad climate-related issues most relevant to our business model:

- **Regulatory** – Policies and regulations related to GHG emissions and climate change, covering the short and medium term
- **Market transition** – Global demand change toward non-fossil fuel energy sources, covering the medium to long term
- **Physical** – Severe weather events, covering the short term and beyond

Elements of the above-described issues manifest themselves over different time horizons. We consider the following horizons when assessing and planning for risks and opportunities.

- **Short-term** – one to three years, which includes our annual budget and reporting period and allows for the realization of near-term operational decisions
- **Medium-term** – four to eight years, which includes our planning cycle and captures strategic initiatives such as the materialization of exploration ventures and further capital allocation into our larger assets
- **Long-term** – beyond eight years, and evaluated more fully against the external scenarios that represent alternate transition pathways and the underlying policy, technical and market assumptions, such as those defined by the International Energy Agency (IEA)

We also see significant opportunities over similar time horizons. Short-term opportunities include fulfilling our commitments to The Environmental Partnership, as well as identifying electrification and infrastructure opportunities throughout our operations. Medium-term opportunities include portfolio changes we have made and will continue to evaluate in the future; and evaluating design concepts for new offshore facilities that improve emissions intensity over the life of the facility, such as the improvements we implemented in the King's Quay floating production system. In the longer term, our natural gas assets in Canada provide a low-intensity resource. Our long-term strategy is to allocate capital to investments in resources that will remain economically attractive under various transition pathways.

The scenario work of the IEA informs our view of long-term energy fundamentals. In particular, the Stated Policies Scenario (STEPS) and Sustainable Development Scenario (SDS) as presented in the World Energy Outlook 2020, frame potential oil and natural gas demand, as well as technology, policy and societal requirements tied to energy transition pathway objectives.

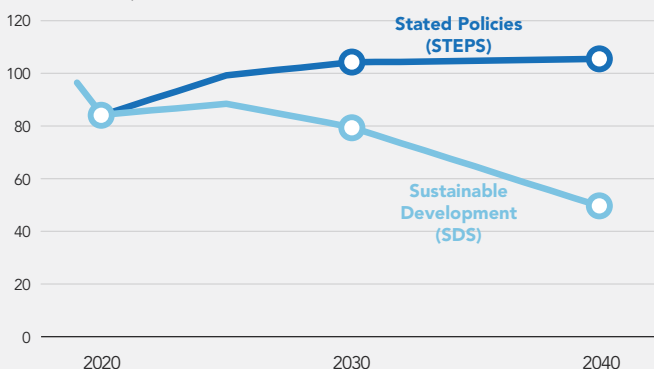
The Stated Policies Scenario (STEPS) reflects the impact of announced policy intentions and targets – Nationally Determined Contributions (NDC) – submitted by the Paris Agreement signatories to reduce their emissions. This scenario projects oil demand flattening by 2030, while natural gas demand rises by 30% by 2040.

The SDS reflects a pathway aligned with the aim of the Paris Agreement of keeping a global temperature rise this century well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase even further, to 1.5°C. This scenario projects that oil demand will fall by over 30% by 2040 and natural gas demand will fall by 12% by 2040. Global CO<sub>2</sub> emissions in the SDS are projected to reach net-zero by 2070. If emissions are held to zero, there is a 50% probability, according to the IEA, of limiting the temperature rise to less than 1.65°C. Temperature rise could be limited to 1.5°C with a 50% probability with the deployment of negative emissions technologies after 2070 under the SDS, according to the IEA.

## Global Oil and Natural Gas Demand

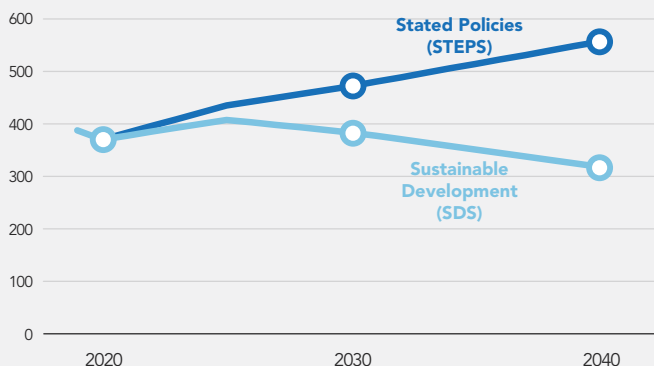
### Oil

Million Barrels per Day



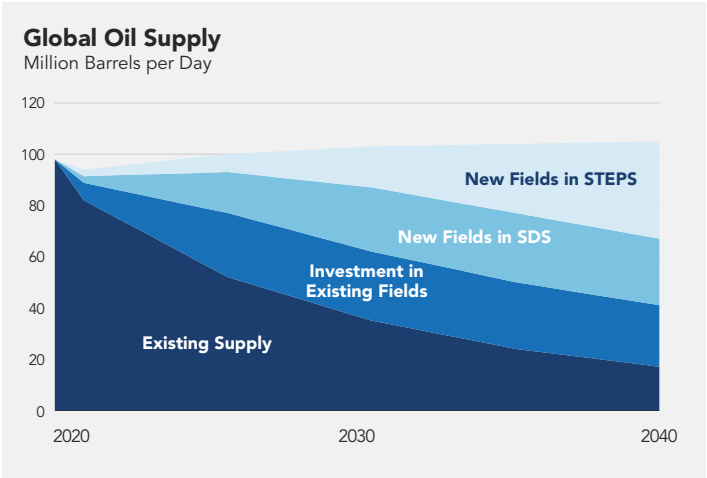
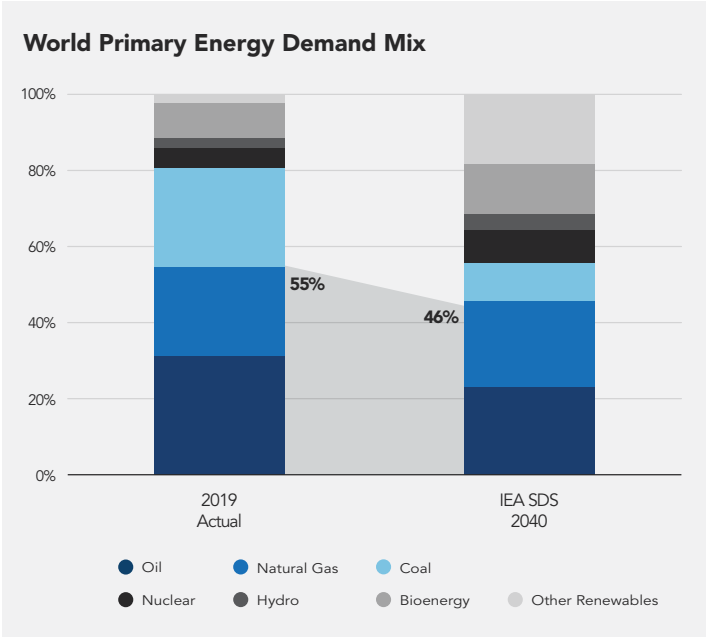
### Natural Gas

Billion Cubic Feet per Day



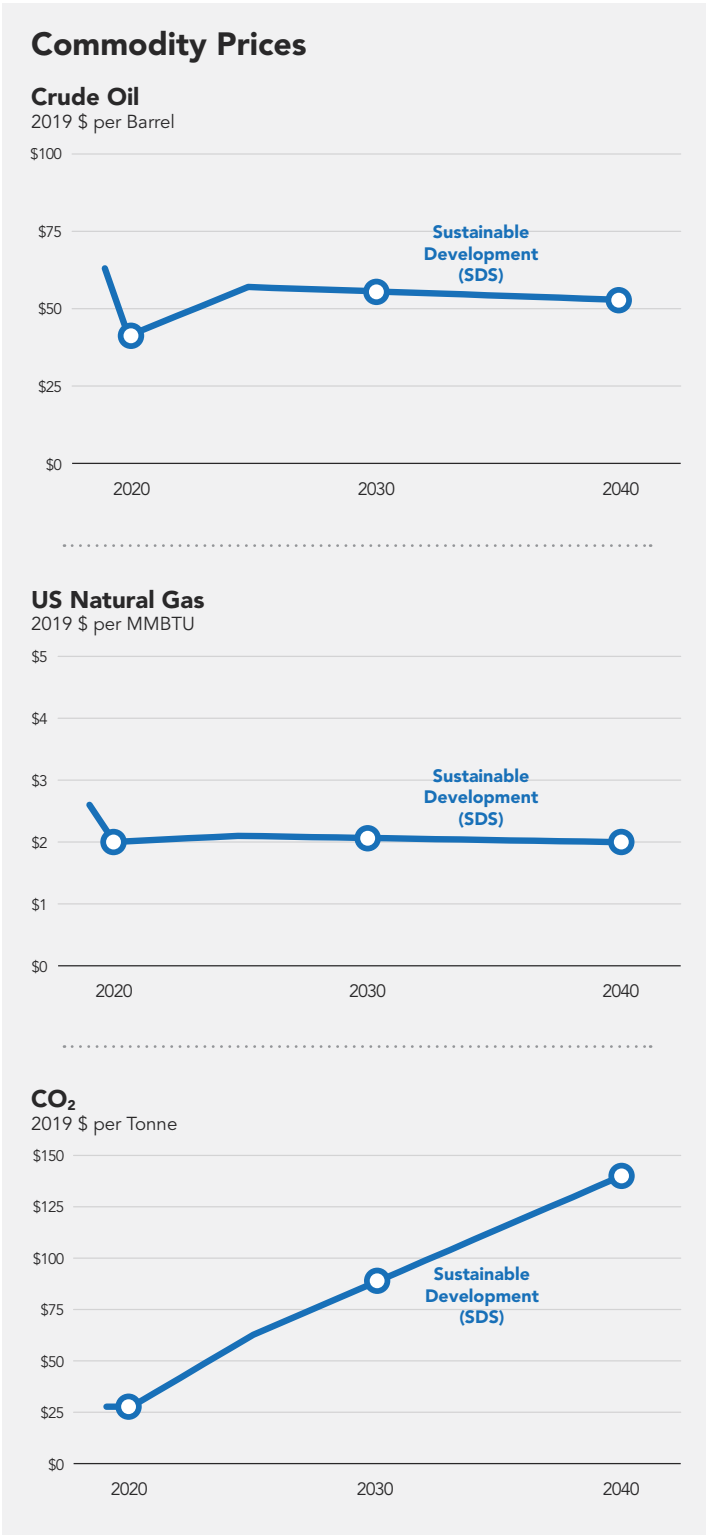
The IEA highlights the important role that both oil and natural gas continue to play in the energy mix in the SDS 2°C pathway. By 2040, oil and natural gas combine to meet 46% of the overall world energy demand. Due to natural depletion of existing production supply, there is need for continued significant investment. IEA projections of global oil supply highlight a substantial gap that will develop by 2040 – equivalent to approximately 50 million barrels of oil per day, which must come from investment in both existing fields and new fields under the SDS.

We believe our strategic positioning enables the company to contribute to the replacement of oil and natural gas supplies over this time horizon. Our existing portfolio reflects oil and natural gas resources that can be developed and produced at an emissions intensity per unit of production that is lower relative to other sources on the supply curve.



**Scenario Analysis**

We consider the IEA Sustainable Development Scenario (SDS) as the 2°C scenario through the projection of 2040 when analyzing the resilience of our strategy. We also apply the associated crude oil, natural gas and CO<sub>2</sub> price projections to our annual Long Range Plan base scenario through the end of life of our existing and known future producing assets. The figures below reflect these projections from the IEA SDS.





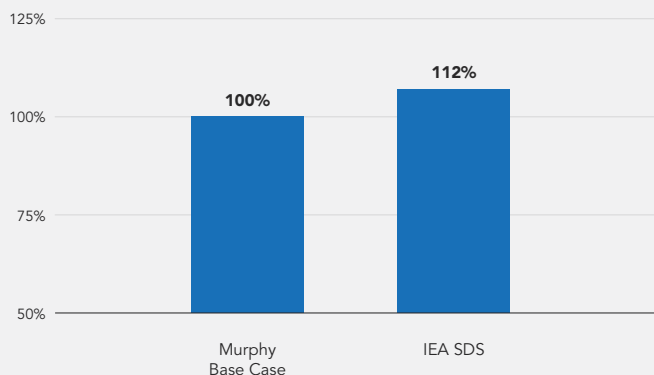
## Assessing Transition Pathways

Relative to our internal forecasts, the IEA SDS oil price forecast is slightly more optimistic, while the US natural gas forecast is slightly more pessimistic. When we applied the IEA SDS oil, natural gas and carbon price projections and compare the impact to the net present value (NPV) of our portfolio of existing and known future producing assets, the Murphy portfolio value increased relative to our Long Range Plan (LRP) base case by 12%. The optimistic SDS oil price offset the unfavorable effects of carbon pricing. We believe our current portfolio of existing and known future producing assets is resilient under the 2°C transition pathway as represented by the IEA SDS. As we perform these scenario analyses, we also confirm that our 2030 GHG emissions intensity target is still viable.

Maintaining the resilience of our portfolio will continue to be a priority. We believe that there is no conflict between leveraging the strength of our portfolio to deliver healthy returns while also continuing to lower our Scope 1 and 2 emissions intensity.

## Murphy Portfolio NPV

Indexed to Murphy Base Case LRP



## Potential Impact on Year-End 2020 Proved Reserves

In addition to evaluating the impact of the IEA SDS 2°C pathway on our Long Range Plan base case, we also considered the impact of the oil, natural gas and CO<sub>2</sub> price projections on our year-end 2020 proved reserves. As specified by the US Securities and Exchange Commission, reserve estimates and future cash flows are based on the average market prices for sales of oil and natural gas on the first calendar day of each month during the year. The average prices used for 2020 reserves estimates were \$39.57 per barrel for NYMEX crude oil (WTI), \$1.98 per MMBTU for Henry Hub

natural gas and \$1.64 per MMBTU for AECO natural gas. These prices are held constant, no escalation assumed, over the life of the producing assets. Upon comparison, the natural gas price is in line with the IEA SDS projection, but the crude oil price is much lower than the IEA SDS. When we applied the IEA SDS prices to our Proved Reserves, we thus saw a significant uplift in value. As a result, we conclude that our current year-end 2020 proved reserves would not be stranded under a scenario such as the IEA SDS.

Our work this year was focused on one pathway. But as new oil and natural gas opportunities arise, we will continue to evaluate their viability against the current, most widely accepted 2°C transition pathway and take alternative scenarios into consideration. Earlier this year, the IEA released a special report mapping out a net-zero by 2050 pathway, which the organization has described as “narrow and extremely challenging.” Looking ahead, we intend to carefully evaluate the findings of the report as well as continue our own internal analysis of what would be required for our company to follow this more challenging pathway.

## Climate Risk Management

### Identifying Climate Risks

Through the Enterprise Risk Management (ERM) process, as described in the Governance and Responsible Business Practices section (see page 61), we identify, assess, evaluate, mitigate and monitor our climate-related risks. We determine the likelihood and impact on a qualitative scale, and rank and prioritize the identified climate-related risks against other risks.

Our views on climate-related risks are shaped by internal and external insights gained from climate policy discussions at federal, state and local levels; energy outlooks from the IEA and others; industry associations and think tanks. Murphy participates in a number of industry associations, such as American Association of Petroleum Geologists (AAPG), American Petroleum Institute (API), Energy and Geoscience Institute (EGI), The Environmental Partnership (EP), Canadian Association of Petroleum Producers (CAPP), Center for Offshore Safety (COS), International Petroleum Industry Environmental Conservation Association (IPIECA), National Ocean Industries Association (NOIA), National Petroleum Council (NPC), and South Texas Energy & Economic Roundtable (STEER). We have also been a sponsor of the Massachusetts Institute of Technology Joint Program on the Science and Policy of Global Change since 1998.

## Managing Climate Risks

As we seek to maximize the long-term value of our assets, we know that we must manage foreseeable short-, medium- and long-term risks, including those related to climate change. Through our ERM process, we have identified the following climate-related risks that might impact our strategy, and are actively managing mitigation efforts.

- **Regulatory Risk** – Critical components of our strategy in managing regulatory risk are HSE management, reducing GHG emissions, and monitoring climate-related policies/regulations and reporting obligations. Murphy has developed four focus areas to streamline our approach:
    - Increasing **internal awareness and transparency** to increase communication both within and across business units, ensuring that cross-functional disciplines are aware of their contribution to emissions and opportunities for improvement.
    - Enhancing **data quality and tracking** to provide higher-quality data, processes and consistency for improved benchmarking and setting key performance indicators (KPIs) and emissions reduction targets.
    - Improving **external reporting and disclosure** to highlight to our employees, shareholders, in addition to our other stakeholders, our understanding of and commitment to climate change initiatives.
    - Formalizing a process for **evaluation and innovation**, ensuring that our technical experts have access to the latest technological advancements, opportunities for participation in research and development, and increasing our ability to effectively evaluate solutions and act quickly upon opportunities.
- For more information, see Improving Emissions Performance in this section (see page 18).
- **Market Transition Risk** – Murphy has identified three key climate-related issues related to the risk of the market transitioning away from fossil fuels and into lower carbon-emission sources. These are:
    - **Fossil Fuel Business Model Disruption** – Technologies for using energy from non-emitting sources have developed rapidly over the last two decades and, in some cases, the usage cost has been decreasing at a noticeably faster rate than previously anticipated. There is a large range of uncertainty regarding future rates of change and timing is unknown.
    - **Price Volatility** – Consumers embracing less carbon-intensive energy sources and carbon pricing could lead to demand destruction and significantly impact long-term net oil and natural gas prices. We use an analytical framework to help us understand and manage this risk.
    - **Reserves Estimation** – As previously mentioned, our risk, reserves and planning functions work collectively with management and the Board to understand the potential impact of carbon prices on future reserve calculations.

Additionally, we continue to investigate low-carbon technologies that complement our existing assets, strategy

and competencies. As discussed above, the IEA alternative transition pathways suggest that oil and natural gas will continue to play a significant role in future energy demand. We will remain disciplined in our capital allocation to ensure our future investments are competitive in these various pathways.

- **Physical Risk** – Our US and international operations are exposed to different types of physical risks, such as tropical systems, floods and other forms of severe weather. We manage their impact by having robust safety protocols in place, as well as maintaining thorough emergency response and crisis management plans. As described in the Protecting Our People section (see page 45), Murphy performs exercises and drills based on different scenarios for all our businesses. Additionally, we have experience in responding to actual events, such as the devastating floods experienced in Houston by Hurricane Harvey in 2017.

## Climate Metrics and Targets

We use a range of metrics to assess our climate and emissions performance, and our efforts to address related risks and opportunities include absolute and intensity metrics for Scope 1 and 2 GHG emissions, Scope 3 emissions, methane and flaring. We also track and report climate and emissions metrics recommended by the Sustainable Accounting Standards Board (SASB) for oil and natural gas exploration and production companies (see page 75 for our SASB index). For a full list of metrics and data, see the Performance Data section (see page 66).

We have established two external targets to drive our emissions performance: a commitment to eliminate routine flaring by 2030 and a goal to reduce Scope 1 and 2 GHG emissions intensity by 15% to 20% by 2030 from a 2019 baseline. Given our commitment to reducing emissions and to progress toward the emissions intensity goal, we engaged ERM Certification and Verification Services (ERM CVS) to conduct an independent assurance on our absolute 2020 Scope 1 and 2 GHG emissions. For ERM CVS's Independent Assurance Statement, see page 73.

For 2021, the Executive Compensation Committee of our Board has added an annual GHG emissions intensity goal as a performance metric in our company's remuneration policy. This metric joins safety and spill performance metrics, which we incorporated several years ago. The target metric for 2021 is set to ensure we remain on the path to achieving our medium-term goal of reducing our gross operationally controlled GHG emissions intensity.

Looking ahead, we continue to focus our efforts to decarbonize our operations. To ensure we follow through with these efforts, we are evaluating additional internal and external targets on flaring intensity and methane intensity, both metrics that we have tracked internally for the past few years.

Water is essential to our communities and our business, and we are committed to responsible water management, stewardship and conservation in all areas where we operate. Murphy strives to be a leader in water management planning and practices, with the ultimate objective of significantly reducing the withdrawal and use of fresh water by our operations.

We have made significant investments in infrastructure to minimize our dependence on fresh water and maximize our use of recycled produced and flowback water and other alternative sources. We continually seek opportunities to reduce further through new technologies, operational efficiencies and industry/ stakeholder initiatives.

Onshore

Water is a key input for our hydraulic fracturing operations and is therefore critical to maintaining our onshore production targets. To help ensure our water use is sustainable, we have a comprehensive water management strategy that addresses development, planning and forecasting, water sourcing, treatment, storage, delivery and recovery, permitting, execution and optimization.

Water Management Strategy

Our water management strategy provides the foundation, philosophy and framework for identifying and managing short-term and long-term needs, solutions and optimization programs. Our General Manager, Drilling and Completions, is responsible for the overall water use for the company. We undertake

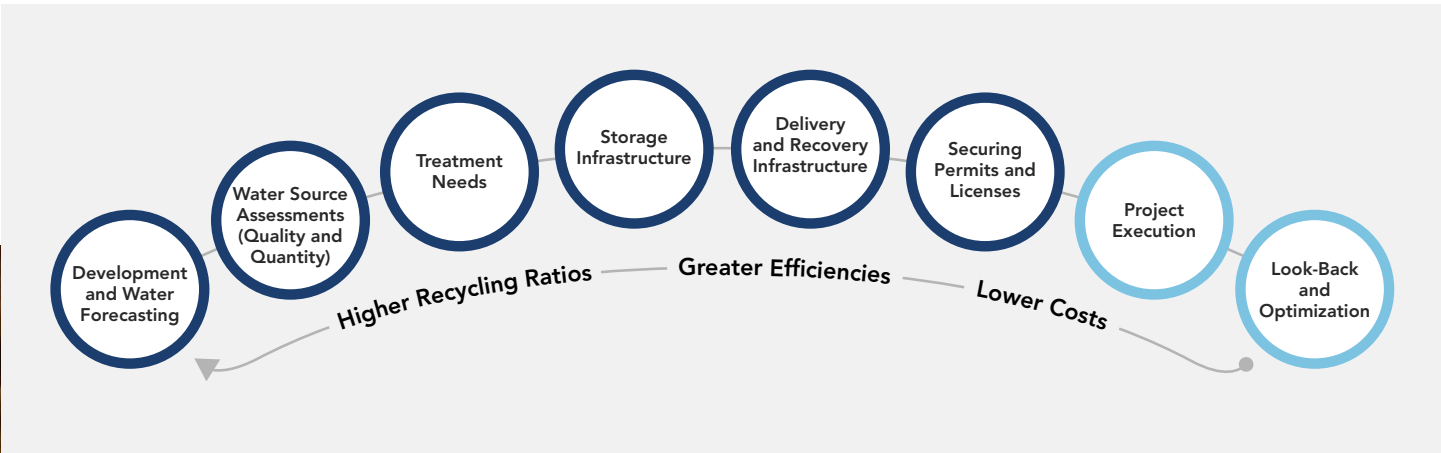
DO RIGHT ALWAYS

Committed to Responsible Water Practices

We understand the importance of water scarcity and the risks it poses, and we are committed to reduce our water use from the Board level down to every manager and employee. We continue to integrate water scarcity into our regular risk assessments and into our business strategies. We do not currently operate in any areas of high baseline water stress. Also, we strive to be the best in class in continuously improving our water metrics, and we are working to set targets and deadlines.

comprehensive planning to ensure adequate volumes and quality of source water are available when required, and to manage post-frac storage and handling when wells are on production, with the goal of maximizing water recycling, improving efficient water use and lowering costs.

When considering water sources for our development projects, we assess opportunities to use fresh and alternative water. We consider a range of factors, including ways to reduce fresh water use, preferences of area stakeholders, regional regulations, physical characteristics as well as economic and technical feasibility. Murphy proactively develops mitigation plans should any water-related risks be identified.



Water Risk Management

Reducing the likelihood of negative outcomes is a key component of Murphy’s water management strategy. Our Water Management team works closely with the Operations teams to integrate water-related risks into our operations risk assessments and business strategy. Water challenges and risks can include insufficient:

- Access to alternative water and freshwater sources
- Water treatment options
- Storage and conveyance opportunities
- Understanding of development plans, seasonality factors and lead times

- Understanding of flowback and produced water rates
- Disposal options, where required

Among the most critical risks to manage are forecasting and sourcing, understanding type curves, and infrastructure and storage support, as outlined in the table below. A type curve is a forecast of the average amount of water we are expecting to get back to surface over a defined time period. It provides a representation of likely outcomes and water management practices, such as required storage volume, likely time for storage to fill, need for disposal wells, etc.

Potential Water-Related Risks and Management Approaches

Key Risks	Water Forecasting and Sourcing	Managing Favorable Outcomes	<ul style="list-style-type: none"><li>• Plan near-term and long-term source water needs</li><li>• Address seasonal variability needs and operational implications</li><li>• Address local topography, stakeholder and regulatory variables</li><li>• Address available water sources; fresh, alternative, third-party</li><li>• Address potential treatment needs for water quality</li></ul>
	Recovery Type Curves		<ul style="list-style-type: none"><li>• Identify fraction of load fluid to be recovered during flowback back and production</li><li>• Define unique characteristics inherent to each operating area</li><li>• Help determine storage and conveyance requirements</li><li>• Help determine volume of fresh makeup water needed</li></ul>
	Infrastructure and Storage		<ul style="list-style-type: none"><li>• Define suitability of short-term and long-term storage solutions based on development program forecasting and type curves</li><li>• Define lead time available and executable solutions</li><li>• Define storage structure types (C-ring, tanks, saline/produced water ponds)</li><li>• Define conveyance needs (temporary or permanent pipelines)</li></ul>

THINK BEYOND POSSIBLE

Bacterial Water Treatment

In 2020, Murphy collaborated with microbiological specialists to advance produced water treatment technology. The goal of the study was to understand the endemic bacterial communities in our Tupper Montney produced water streams at various production points and how the communities might interact and produce unfavorable byproducts when mixed together in our produced water reservoir.

With this knowledge and a desire to enhance compatibility, flocculation and odor control properties without using standard mechanical or chemical means, beneficial bacterial strains were

introduced to the produced water (in a laboratory setting) to help remediate the water’s unwanted characteristics through a process called bioaugmentation. Initial results have been promising. Murphy expects that with additional research, commercial viability may be realized.

This technology is typically used in biological wastewater plants for the treatment, purification and sanitation of municipal effluent. Although the end treatment goals are the same, the technology is in its early adoption phase in the oil and natural gas industry.



## Water Sourcing

Whenever possible, we seek to use alternative, non-fresh water sources including flowback and produced water and saline groundwater. When we have exhausted or are not able to use alternative water sources and freshwater sources are required, we ensure that our operations, when practicable, avoid wetlands, streams, ponds and lakes, waters of the US (WOUS) or US Army Corps of Engineers (USACE) waterbodies, as well as areas with higher water scarcity.

Before any fresh water can be withdrawn and used for our operations, we must secure an approval from the local regulatory or governmental agency. We work with trained natural resource specialists to conduct environmental site assessments, including assessing the volume and timing of water flow required for proper functioning of the local aquatic ecosystem analyses when required for water permit applications. Where required, we conduct surface or groundwater monitoring, in addition to other precautionary measures that may be required, such as adhering to riparian habitat and wildlife setbacks.

We use the World Resource Institute's Aqueduct Water Risk Atlas tool to baseline water stress levels to aid in decision-making processes. While there are shifts month to month, when considered on an annual basis, the majority of Murphy's operations are in low- to medium-risk (1-2) areas. We have no operational activities in locations of high (3-4) or extremely high (4-5) overall water risk.

## Water Management Networks

Our dedicated Canadian freshwater networks allow us to strategically withdraw and impound water volumes necessary to support development activities during "water-rich" or "freshet" (annual spring rise of streams in cold climates as a result of snowmelt) times of the year, reducing local environmental impact and maintaining available free allocation for other area water users.

In the **Tupper Montney**, Canada, resource play, we operate two discrete water infrastructure networks, a 472,000-barrel produced water pond and a 1.25-million-barrel freshwater pond. Approximately 59 miles of water pipeline supports the saline reservoir by allowing direct displacement, storage and withdrawal without the need for trucking or third-party disposal. This infrastructure reduces our demand on local freshwater sources and substantially reduces the number of trucks needed to support day-to-day operations. Our produced water network allows us to capture up to 100% of the water from frac flowback and production operations for storage and recycling.

In the **Kaybob Duvernay**, Canada, resource play, a unique area posing unique logistical challenges, Murphy invested in freshwater pipeline (22 miles) and reservoir infrastructure in 2019 and 2020. Reducing our operational footprint across the Kaybob East and Two Creeks fields enables us to strategically withdraw fresh water during high-flow periods for impoundment, staging and future use during low-flow periods. The reservoirs also allow us to operate and impound groundwater when local surface water sources are not available. We continue to evaluate solutions to increase recycled water utilization.

In the **Eagle Ford Shale**, Texas, resource play, a hybrid reservoir infrastructure network, with more than 40 fresh/produced water reservoirs, allows us to store water in preparation for future operations, and also serves to capture water from frac flowback and production operations once wells are online. We also have an extensive above-ground pipeline system and significant access to groundwater wells.

Our Tupper Montney and Eagle Ford Shale fit-for-purpose networks offer direct (1:1) freshwater use reductions.

## Water Definitions

We have adopted the following definitions for our internal and external reporting purposes, based on SASB and IPIECA's guidance.

**Fresh Water** – Defined according to the local statutes and regulations where we operate

- In Texas, the Railroad Commission's Groundwater Advisory Unit (GAU) defines freshwater zones as generally less than 1,000 mg/L total dissolved solids (TDS). This is consistent with the US Geological Survey definition.
- In Alberta, the Alberta Energy Regulator (AER) defines fresh water as non-saline water less than or equal to 4,000mg/L TDS.
- In British Columbia, the Oil and Gas Commission (BCOGC) defines fresh water as non-saline water less than or equal to 4,000mg/L TDS.

Freshwater sources include surface water (rivers, lakes, streams, surface run-off, etc.) and groundwater.

**Alternative Water Sources** – Water obtained from sources such as saline groundwater, recycled produced water, municipal effluent, and sharing/collaborative opportunities

**Fresh Water Withdrawn** – Volume of water drawn from freshwater sources

**Fresh Water Consumed** – Volume of fresh water used for our onshore operations. Due to the timing of freshwater withdrawals and consumptions, the withdrawal amount may not necessarily equate to the consumed amount in a particular calendar year.

**Produced Water** – Saline water that is brought to the surface during the production of hydrocarbons, including formation water, injection water and flowback water

**Recycled Water** – Alternative water that is used in operations after treatment, to reduce freshwater withdrawal

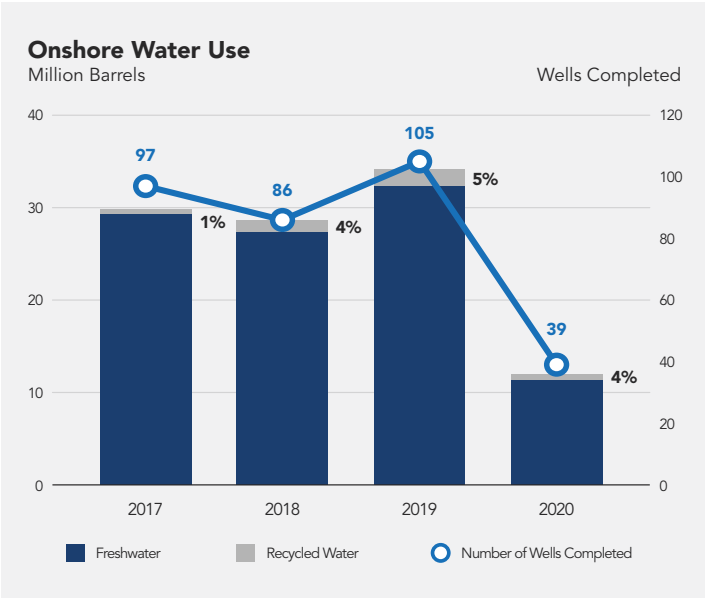


Water Consumption

We always prioritize using non-fresh water when possible. However, at some of Murphy's locations, storage and conveyance restrictions limit our ability to reuse flowback and produced water. Similarly, consuming alternative water types can be dependent on achievable treatment quality, local regulations, geography and hydraulic fracturing activity levels, scheduling and partner water sharing arrangements, necessitating a unique approach to water management within each of our different operating areas.

In 2020, our operational activities fell significantly. We only completed 39 wells, down from 105 in 2019. Consequently, our total water use fell 65%. From 2018 to 2020, the percentage of recycled water to total water consumed has remained relatively flat, at about 4% to 5%, while on average 12% of frac flowback and produced water generated was recycled. We continue to explore opportunities and technologies to support efforts to increase our recycling ratio.

As an internal best practice and in accordance with legislative requirements, we track and report water metrics across all onshore business units. These figures include freshwater consumption, alternative water consumption, alternative water sharing volumes and freshwater use intensity (barrel per lateral length and barrel per frac stage). This practice helps drive process improvements, maintain compliance, facilitate transparency and reduce risk associated with future water needs.



SUPPORT EACH OTHER  
Water Monitoring App

Our Operations and Data Science teams worked together to develop a water software application to continuously monitor the Tupper Montney produced and flowback water reservoir's leak-detection system and pond volume. The application also supports our daily and monthly inspection programs.



In **Tupper Montney**, our 2020 activity levels were minimal, and we did not hydraulically fracture any wells. Although we did not consume water, we stored approximately 300,000 BBL of produced water for recycling and future use. We project that our produced water use percentage per well completed will average approximately 40% in 2021, the highest performance achieved since development of the asset began.

In **Kaybob Duvernay**, due to its unique logistical and regulatory challenges, reuse of significant volumes of alternative water is constrained. In response, we constructed two large freshwater reservoirs in 2019 and 2020, to address risks associated with freshwater impoundment during high-flow periods for use in operations during low-flow periods. This helps us to limit the local environmental impact until such time that Murphy can reuse larger quantities of alternative water.

In the **Eagle Ford Shale**, we prioritize use of alternative water volumes and source groundwater as a secondary choice, followed by fresh surface water. Our average recycled/freshwater ratio used per well completion has increased approximately 400% since 2017. Additionally, in 2020, we reused approximately 535,000 BBL of produced water in our operations.

Offshore

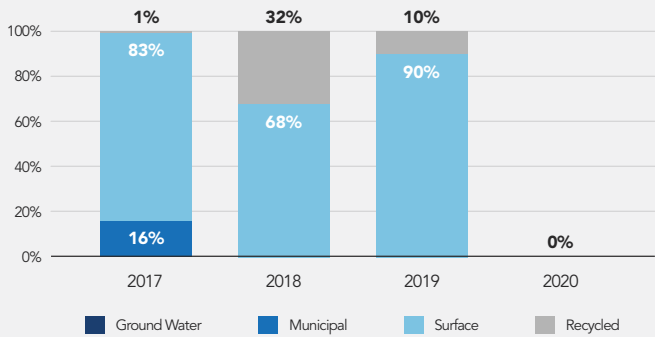
Our **Gulf of Mexico** business does not use fresh water for oil and natural gas production. Uses are for functions typical to marine environments, including ballast systems, machinery cooling and potable water. All water provided to facilities is sourced from seawater and is either untreated or treated with metal ions. Potable water for hygiene and galley use is generated through reverse osmosis, and then returned to the sea through overboard discharges, with regular monitoring for low oil content and toxicity to ensure it has no impact on aquatic environments. When discharging water offshore, we comply with the National Pollutant Discharge Elimination System, managed and regulated by the EPA.

Water-Related Industry and Multistakeholder Collaborations

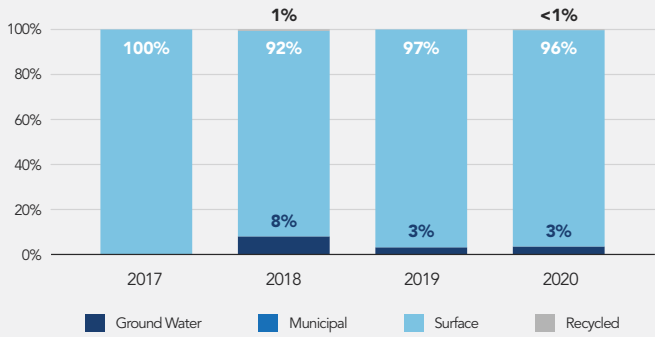
Murphy belongs to and is an active participant in several stakeholder and industry initiatives that aim, in part, to mitigate water risks. These groups include the Offshore Operators Committee (OOC) Water Subcommittee, Montney Water Operators Group (MWOG), Fox Creek Operators Group (FCOG) Water Management Sub-Committee, Kiskatinaw River Users Group and the South Texas Energy & Economic Roundtable (STEER) Water Committee. These initiatives provide a forum to allow exploration and production companies to work together, cooperate and facilitate on key water issues, including responsible development through water sharing, alternative non-freshwater source research and development, infrastructure sharing and best operating practice discussions.

Water Use Balance

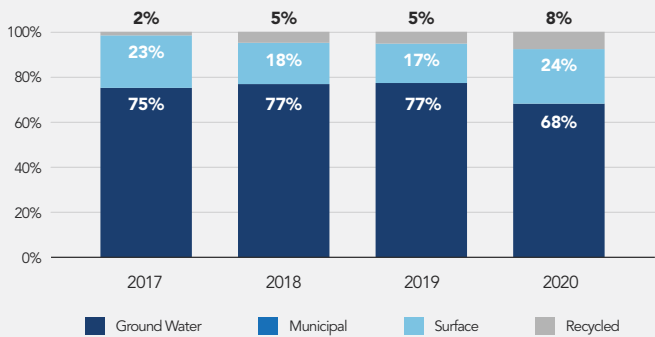
Tupper Montney



Kaybob Duvernay



Eagle Ford Shale



CONSIDER THE IMPLICATIONS  
Multistakeholder Engagement

In British Columbia, Murphy is part of the Kiskatinaw River Users Group, which also consists of the City of Dawson Creek, Orintiv, Inc., ARC Resources, Royal Dutch Shell and government and regulator representatives. The Kiskatinaw River is the main source of drinking water for the City of Dawson Creek and the main source of irrigation for nearby farmland. This group was formed to manage withdrawal rates and volumes from the Kiskatinaw River, encouraging conversations between water users to retain adequate fresh water for nearby communities and to maintain adequate river flow rates for all other downstream users.

We are committed to protecting biodiversity at all operating locations and at all stages of the project lifecycle. From planning through execution, the subsurface, construction, environment and land teams collaborate to minimize project footprint and impacts to water, soil, archeology and wildlife. At the end of every project, the HSE team is responsible for implementing a decommissioning, remediation and restoration standard, which is part of the Murphy HSE Management System.

Our Environmental Impact Reduction and Mitigation Policy requires that our procedures meet or exceed mandated guidelines. Our goal is to minimize the impact to biodiversity, regardless of local government requirements. Company policy and procedures enforce an attitude of never settling for “good enough.” This is an attitude that is reflected in the way we do business at the corporate and field level.

### **Lifecycle Approach to Biodiversity Protection** **Pre-Operations Assessments and Mitigation Planning**

Our first step in all surface operations is to conduct a biodiversity analysis before we make any disturbances to the surface. Our biodiversity analysis is conducted by internal and external experts from multiple biodiversity disciplines, to ensure all potential environmental/ecological impacts are assessed and addressed.

The biodiversity analysis process starts with the identification of the area that will be affected by surface operations. This area is broadly mapped in an ArcGIS mapping database and submitted to the Biodiversity team. The mapped area is cross-referenced against all public biodiverse databases to create a Regulatory Site Assessment (RSA), which determines if any government established areas of concern exist in the proposed project area. Once this public information is processed, the Biodiversity team will finalize an Environmental Site Assessment (ESA) by conducting an on-site inspection to verify the public data and determine if there are any other concerns related to ecology, environmental geology, hydrology and urban impacts not provided for in the public data.

The RSA and ESA identify areas of concern and provide a mitigation plan. Mitigation plans may include environmental monitoring devices, sharing the use of existing third-party owned infrastructure instead of impacting the surface by building new infrastructure, extending project timelines to account for migratory species, additional surface impact protection, and project relocation in instances when mitigation efforts are not sufficient. Mitigation plans are not exclusive and can incorporate several different objectives, along with input from all types of biodiversity experts. This allows for each impacted area to get a more tailored approach for mitigation.

### **During Operations**

Immediately prior to the construction of a project, locations are screened for any wildlife presence. If wildlife is detected, a biodiversity expert is brought to the location to properly identify the wildlife species and indicate the proper mitigation methods. These methods generally focus on avoidance of the area entirely until nesting, mating or hibernation periods have elapsed. Once a project footprint has been swept and no wildlife has been identified, project construction may begin/continue. Surrounding wildlife is surveilled from the beginning stages of construction until a project is closed and/or decommissioned, to ensure wildlife disturbance is kept to a minimum while ensuring the safety of field employees. Wells have berms around the perimeter of the surface location, which contain liquids on-site. If a site becomes saturated by either rain or snowfall, liquids are tested on-site before they are allowed to drain off-site via pre-installed drainage, which is plumbed through the berm. In addition to berms, pad sites are also built with erosion protection to reduce pad material from contacting contiguous native lands.

### **Site Closure**

To ensure proper abandonment and closure of sites, Murphy established a process to estimate abandonment/closure liabilities with annual reviews and updates for accuracy, and then carries these estimates as liabilities on the balance sheet. These abandonment/closure liabilities are included as projected expenditures in all economic analysis, cost/revenue forecasts, the yearly budget process and long-range plans.

For all projects, we conduct extensive sampling and testing of the soil to establish its condition prior to making any impact, catalogue the samples for each property and scrutinize them upon closure. The goal of any closed area is to remediate that area so that it is brought back to its original condition as reasonably practical. The HSE department, led by its Vice President of Health, Safety and Environment, manages the closure of each impacted area to ensure our remediation goals are met and that all reporting documentation is properly finalized for governmental purposes and for landowner reporting.

### **Proactive Community Engagement on Biodiversity and Site Impacts**

We involve the surrounding community in our biodiversity assessments, mitigation planning and site closure process. For example, in British Columbia, we notify landowners, local Indigenous Nations, municipalities and regional districts of all closure plans. When local issues arise, we seek a resolution that weaves community concerns into Murphy's Project Reclamation and Closure Policy, ensuring a unified solution that works for all parties. Community concerns, along with updated government mandates, are an important guide to our physical site remediation and reclamation processes.

We provide a variety of channels for stakeholders to engage with us regarding concerns of biodiversity protection. For example, in Canada, external stakeholder engagement is a required component of permit issuance for all well sites, pipelines and any other facilities. Soils, archaeological, wildlife and vegetation studies are also required as part of the RSA and ESA process. When permit applications are filed, contact information for any stakeholder concerns are provided in the public notification letter. In the US, even though external stakeholder engagement is not always required, Murphy routinely involves its surface stakeholders in the development process to ensure surface land concerns are fairly balanced against ongoing production and development operations. This balancing process includes all

surface operations – well sites, pipelines (water, oil and natural gas) and production gathering facilities.

Murphy stakeholders can raise biodiversity concerns or grievances using the following methods:

- **By Phone or Website** – We have a dedicated center to process and document any concerns or comments raised by phone or via the website. The call center refers comments to the Land Department, which is responsible for recording, referring, monitoring and ultimately resolving all queries.
- **Surface Land** – All Murphy landowners are provided with a dedicated surface landman that they can call for any issue. The landman is responsible for ultimate issue resolution.

## STEP UP AND LEAD

### Fox Creek Operators Group, Canada

More than 50% of our current proved reserves are onshore fields in Canada, which has some of the world's most comprehensive environmental regulations at the federal, provincial and territorial level. We are proud to operate in full compliance with all laws that govern our operations, including those that protect land use and biodiversity.

The Fox Creek Operators Group (FCOG) is a committed group of exploration and production companies working together to ensure the responsible development of the Kaybob Duvernay play in Alberta. Murphy, along with six other member companies, participate in FCOG. We have a joint responsibility to identify opportunities for collaboration, and we work together to identify operating efficiencies, thereby providing long-term value in the Fox Creek region.

Reducing our operating footprint, and therefore our impact on the land and wildlife, is a core focus of the group. Footprint reduction successes as a result of collaborations include:

- Sharing roads to access water sources, water storage facilities and water intake facilities
- Multiuser road upgrades to enable access to water infrastructure and well sites
- Infrastructure sharing agreements to use existing approved permanent water diversion points, pipeline infrastructure and storage facilities. These reduced the following:
  - Activity in the river and at river's edge
  - Surface operations due to proximity to permanent infrastructure
  - Risk of safety incidents related to the activities associated with temporary surface lines and equipment



## Spills Management

Managing spill risk is a critical element in reducing our environmental impact. Procedures to minimize such incidents are covered by our HSE Policy and HSE Management System, asset integrity management and internal annual targets.

Murphy tracks its environmental releases throughout the year and evaluates the data for preventative measures and continual improvement. Historically, internal targets were set based on the number of spill events in any year, utilizing the International Association of Oil and Gas Producers (IOGP) calculation of hydrocarbon spill events of more than 1 BBL outside secondary containment.

In 2019, we modified the spill metric target used in our annual bonus compensation to focus on minimizing our overall hydrocarbon spill volumes rather than just the number of events. We set the metric by reviewing industry peer data and setting a target we believe reflects favorable performance relative to the industry as a whole.

Thanks to the efforts of our employees, contractors and those performing work at Murphy operations, our spill rate was 1.1 BBL spilled per MMBOE produced for 2020, substantially below our target of 4.9 BBL per MMBOE and better than the IOGP North America 2019 benchmark of 2.9 BBL per MMBOE. This rate is calculated as the total hydrocarbon spill volume of more than 1 BBL outside secondary containment per million barrels of oil equivalent of operated production. The spill rate of 1.1 BBL per MMBOE is the result of four IOGP spill events in 2020, with a total of 81 BBL spilled during the year, compared to 83 BBL released from one spill event in 2019.

More notably, Murphy has not had an offshore spill greater than one barrel since 2003. We remain vigilant to minimize risk across our operations.



0

Offshore Spills Over 1 Barrel  
Since 2003

2

Years Running  
Beat IOGP North America  
Industry Average Spills Rate

just  
1.1

Barrels Spilled  
per MMBOE Produced,  
Surpassing 2020 Spill Target



Process safety and asset integrity are central elements of our HSE Management System. In 2020, we created a Global Asset Integrity and Reliability team to focus priorities, increase collaboration across business units and standardize practices and procedures where available.

Process Safety

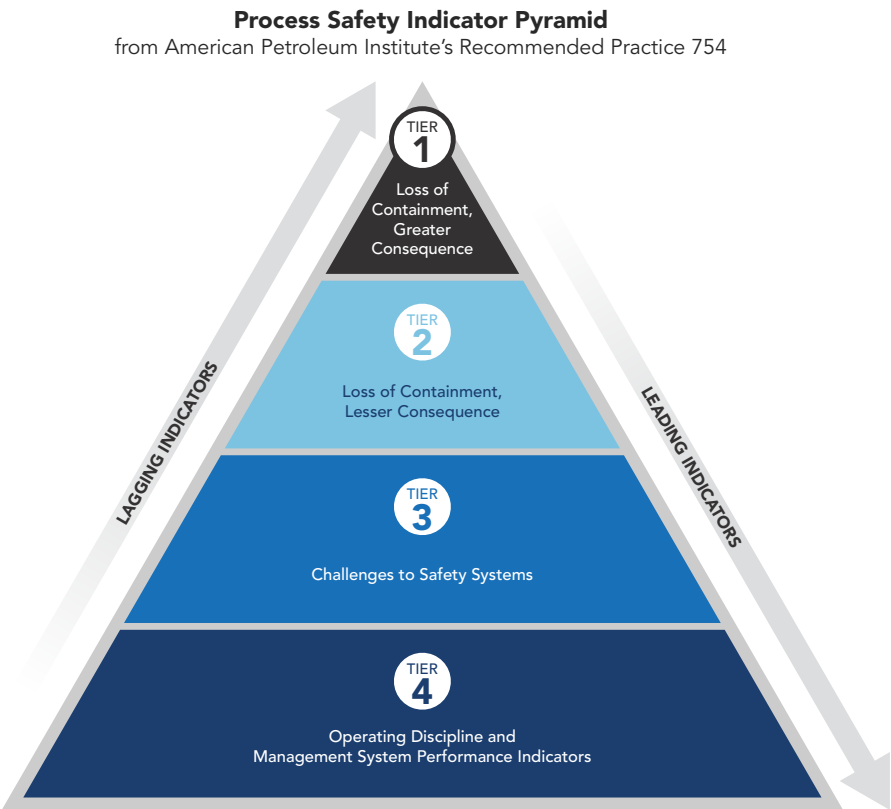
In 2018, we kicked off a multidisciplinary effort to create a focused and structured approach for process safety event tracking and overall improvement through defined key performance indicators. Over the past few years, we have been able to better understand and mitigate risks in our operations across all assets by modeling our program to the American Petroleum Institute’s Recommended Practice 754 (API RP 754).

Process Safety Events (PSE) are tracked and ranked by severity following guidance from API RP 754. Tier 1 through Tier 3 are categorized as lagging indicators, and as such, we log them in our incident management database. Leading indicators or near-misses (Tier 4 events) have been defined, and these key performance indicators are tracked through various mediums and summarized in dashboard views. All PSE 1 and 2 events are investigated for root cause, and we take actions to ensure there is not a repeated failure. When multiple low-consequence and PSE 3 events occur, we may perform root-cause analysis.

Key highlights of our 2020 process safety and asset integrity activities include:

- **Developing Computer-Based Training** that details Murphy’s Process Safety Program and was pushed to all personnel who interact with Operations. This program is based on API RP 754.
- **Implementing an Alarm Management Dashboard** that allows us to increase performance and safety by improving our response time to rationalized alarms. It prioritizes maintenance issues by identifying repetitive processes that can lead to process safety events, identifying nuisance alarms, and tracking the alarms in place for improvement over time. We now have quantitative data for auditing and comparing to standards, and using benchmarks Engineering Equipment and Materials Users Association (EEMUA) 191 to qualify our system’s current state.
- **Establishing a Management of Change (MOC) Dashboard** that allows for a deeper dive into which MOCs are in evaluation, collaboration, approval and implementation stages. This dashboard has improved start-to-closeout timing and has improved overall adherence to our management of change program.

Process Safety Events (PSE)	2018	2019	2020
PSE Tier 1 Count	9	5	3



Asset Integrity

We plan for and evaluate the integrity of our assets throughout the life cycle from design, construction and operations to abandonment. Qualified and competent personnel perform all field inspections and data analysis. We use a variety of metrics and key performance indicators to determine the effectiveness of our programs. Each asset has created integrity management programs that detail requirements for the management and review of pressure equipment, pressure piping, pipelines and structural integrity.

In many cases, our requirements exceed regulatory requirements. The effectiveness of our approach is illustrated by the results of third-party and regulatory audits of our programs. For example, in Canada, we have undergone regulatory audits and since 2018, we have received grades consistently above 90% on our asset integrity management programs.

We emphasize risk-based inspections. In 2020, we implemented digital information systems to improve awareness of risk and the evaluation of inspection data across our operations. We recently added US onshore to our Canadian pipeline risk-assessment tool, which houses risk assessments and data for approximately 750 miles of Murphy's operated active pipelines across North America onshore. We also reduced the risk of our higher-severity lines through routine pigging, in-line inspections, verification digs, chemical programs and coupon programs.

We regularly monitor key asset integrity factors, including pressure piping, pressure equipment, riser and structural integrity, through visual assessment and our thickness measurement

program. We monitor approximately 120,000 condition monitoring locations for approximately 2,200 pressure vessels and their associated piping across all assets. Inspection data is uploaded into a database that is reviewed regularly with operations, maintenance, production and facilities organizations for refinement of our integrity programs.

Not only do we conduct inspections on defined schedules, but we also have continuous monitoring of our systems for abnormal conditions. The Remote Operations Center (ROC) continuously monitors our operations for changes in pressure or flow, in order to dispatch operations personnel to intervene when necessary. Equipment and pipelines with a higher risk rank are prioritized for ongoing maintenance, operator checks and inspections. When necessary, components are proactively replaced to avoid failure and loss of primary containment.

Subsea Leak Detection

In 2020, Murphy completed the final stages of our subsea leak detection (SSLD) program. The program began in 2018 as part of our "Think Leak First" philosophy, designed to empower our staff to "Own It" and use stop-work or stop-production authority where required. All subsea assets were reviewed on a case-by-case basis, and the appropriate leak detection methodology was implemented and put into operation. Leak detection methodologies implemented include visual surveillance, flowline hydrostatic monitoring, rate of change (ROC), conditional rate of change (C-ROC) and modified mass in mass out (MMIMO). All offshore production operations staff have been trained on SSLD, which is now included as part of our competency program.

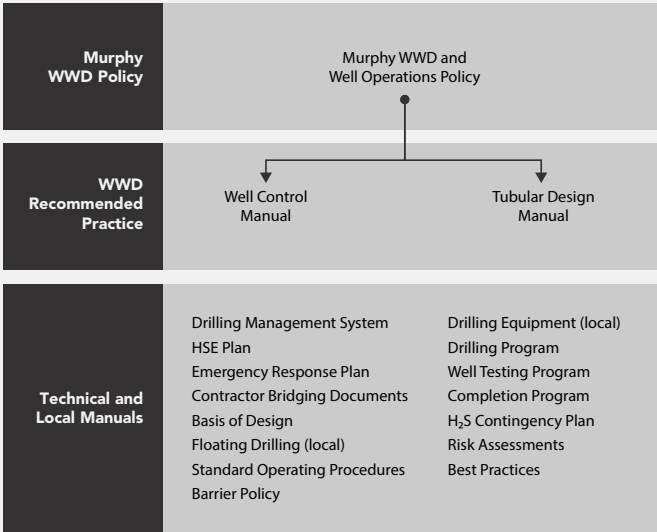
Well Integrity

Effective well management and well integrity are critical to the safety, environmental and operational performance of our operations. It is the responsibility of every operations manager and employee to maintain well integrity while managing our onshore and offshore wells. We ensure that our wells are designed, drilled, completed and maintained to high and consistent standards, complying with all relevant laws and regulations, and compatible with the balanced economic and environmental needs of the community.

The Murphy Worldwide Drilling and Well Operations Policy Manual outlines the relevant policies, standards and practices for design, risk management, installation, testing verification and operational procedure management. This Policy Manual underpins our ability to meet our HSE goals; remain in compliance with our HSE Management System; and prevent incidents that could have a negative safety, environmental or economic impact. We review it periodically to assess changes and continuous improvement opportunities.

Our well integrity guidelines, policies and procedures are aligned with best practices and exceed regulation standards around the world where we operate. This includes best practices for barrier management, as well as the barrier between the formation and the environment throughout the life cycle of a well. Our Barrier Policy includes specifications for barrier types, barrier verification and independence, well life cycle, barrier hazard assessment and well abandonment.

Worldwide Drilling (WWD) and Well Operations Policy Hierarchy



## Engineering Design

We begin engineering well design long before a well is permitted. Geologists and engineers evaluate formation depths, pore pressures and rock fracture gradients, to site and design wells in ways that will prevent loss of well control and, in the case of onshore wells, ensure the protection of freshwater aquifers. Key engineering and design best practices that we follow include:

- **Multiple isolation barriers** – We place steel casing and then pump cement to protect the steel and provide multiple isolation barriers for each steel casing run in the well.
- **Identify and mitigate potential drilling hazards** – We identify zones with potential drilling hazards (such as hydrogen sulfide, carbon dioxide or high pressure) and use American National Standards Institute/National Association of Corrosion Engineers (ANSI/NACE) standards to select proper materials and chemicals to ensure integrity of the wellbore and surface equipment to prevent corrosion for the life of the well.
- **Careful casing design and testing** – When developing casing designs, we take into account considerations such as temperature, pressure, bending, cementing, running casing, shock loading, pressure testing, lost circulation, buckling and well testing loads. We apply additional safety factors for various load conditions, including burst, collapse, tension, compression and triaxial stresses.

## Drilling and Completions

As part of the completions process, physical isolation devices are put in place to ensure that activities are executed in a flow-controlled and safe manner. Murphy requires multiple isolation devices, all of which are tested and capable of operating both independently and simultaneously throughout the lifecycle of a well, including blowout preventers, wellhead, casing, cement, packers and bridge plugs. Before completions, pressure tests are performed to ensure integrity of all the casing strings installed. During completion pumping operations, pressures are monitored to inspect potential communication between casing strings and existing offset wells. Additionally, the onshore Remote Operations Center (ROC) monitors dashboards for offset frac mitigation while hydraulic fracturing operations are ongoing.

Our engineers participate in quarterly Gulf of Mexico deepwater drilling and completions operators group meetings with other operators to share lessons learned and best practices for deepwater well operations. Industry lessons learned and best practices are referenced when the Murphy Worldwide Drilling Policy is reviewed to support continuous improvement. The engineers work with vendors to identify and analyze technological and operational improvement opportunities for application to our assets/projects.

Our vendor selection process includes criteria for environmental and safety performance; we choose to work with contractors that support our sustainability goals. We also contract with drilling rig quality assurance audit companies, whose highly skilled consultants create value by advising on HSE risk mitigation and the optimization of rig equipment performance. Their goal is to assist clients in achieving their objectives of working safely with no incidents, accidents or injuries and recognizing issues that will reduce nonproductive time, while lowering overall cost.

## Production Operations

All well performance data is centrally stored in WellView®, a drilling and well operations data management software program, to maintain downhole well records. Once an onshore well is brought online, its parameters, such as flow and pressures, can be monitored remotely 24/7 in our ROC.

We continuously monitor offshore wells on location in our control rooms to ensure all wellbore parameters stay within engineered wellbore design limits. We adhere to all prescribed regulatory testing, which includes surface-controlled subsurface safety valves, underwater safety valves and boarding shut-down valves. All of these regulated tests are verified by relevant government organizations.

## Well Abandonment

Murphy performs well abandonments according to federal or state laws and regulations. We work to ensure downhole isolation of hydrocarbon and sulfur zones, protection of any freshwater aquifers, and to prevent migration of formation fluids within the wellbore or to the seafloor.

## Industry Collaboration on Well Integrity

In 2018, Murphy participated in the update of the Well Control/BOP Industry Standard (API Standard 53). Representatives sat on various committees and provided engineering and operational expertise and advice to API and other industry associations.

We are members of the Center for Offshore Safety (COS), an industry-led initiative to promote continuous safety improvement for offshore drilling, completions and operations through effective leadership, communication, teamwork, disciplined management systems and independent third-party auditing and certification. COS draws on expertise and input from the US oil and natural gas offshore industry and the regulatory community.



### Onshore

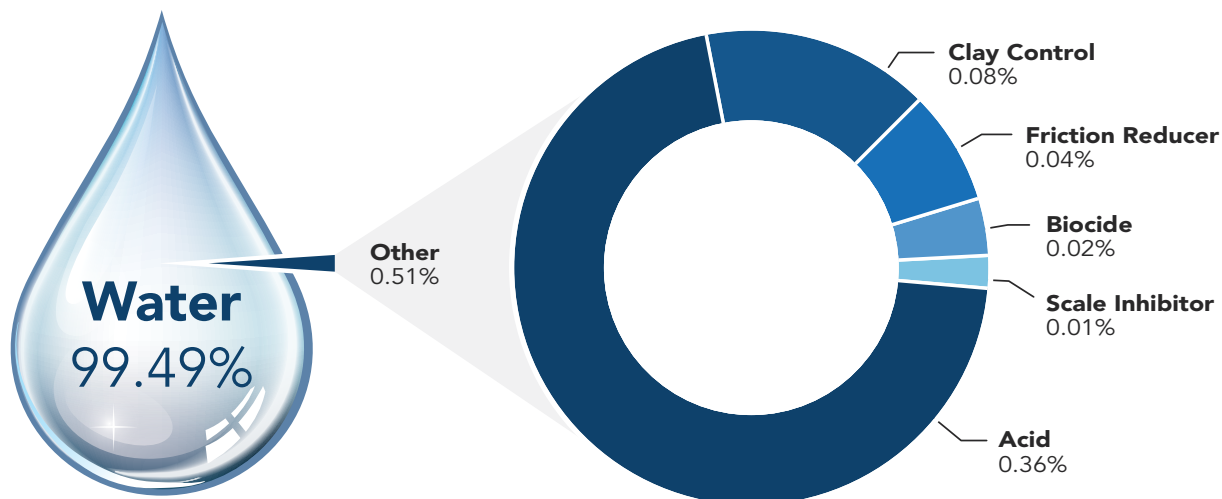
Approximately 99.5% of the frac fluid that Murphy pumps down a well on a typical onshore unconventional hydraulic fracturing job is composed of water and sand, with just 0.5% other additives. We do not pump any fracturing fluids downhole that contain diesels or heavy metals.

We do not store additive chemicals on location. Instead they are blended in real time on-site as needed, and Safety Data Sheets (SDS) are located at Murphy work sites and available for all personnel. SDS include physical, health and environmental hazards, as well as protective measures for proper handling, storing and transportation of each chemical.

In accordance with US and Canadian regulatory bodies, we utilize and require our pumping service providers to utilize [FracFocus](#), a US online chemical disclosure registry, to publicly disclose the chemicals used to hydraulically fracture our unconventional wells, while protecting trade secrets and confidential information.



**Average Onshore Hydraulic Fracturing Fluid Composition**



### Offshore

In our offshore operations, our optimized chemical usage reduces risks associated with the transportation of materials, as well as transportation-related emissions. In addition, we require chemical vendors to commit to improvements in sustainability and safety. We are also working with vendors on new product development to improve efficiencies to reduce overall usage. We conduct research into new sustainable chemistries and into implementing short- and long-term sustainability and environmental science-based targets, including reduction in emissions and waste.

Key improvements we have achieved recently include:

- Our Front Runner facility transitioned to using a newly developed densified asphaltene inhibitor, resulting in a 66% reduction in asphaltene inhibitor chemical volume in 2020 from 2019.

- We transitioned to a newly developed low dosage hydrate inhibitors (LDHI) product in December 2020, resulting in a 47% reduction in the 1Q 2021 LDHI treatment volumes from the 2019 average. Through digitization and automation in the chemical treatment program, we have been able to more closely monitor and optimize chemical usage, allowing for targeted rightsizing of pump infrastructure and the identification of operational strategies to mitigate the need for chemical treatment. This process, along with dedicated technical optimization efforts, facilitated the total average reduction of 39% of chemical usage from 2019 to 2020 at Murphy's operated facilities.

### Onshore

Induced seismicity refers to earthquakes that are caused by human activity. Although the risk and occurrence are generally low, induced seismicity can be associated with hydraulic fracturing operations and wastewater disposal sites in unconventional oil and natural gas fields.

We actively assess the potential for these risks, monitor for anomalous induced seismicity and mitigate in full compliance with regulatory agency standards. Key regulators with which we collaborate on seismicity include:

- **Alberta Energy Regulator (AER)** – Kaybob Duvernay operations are governed by Subsurface Order No. 2.
- **British Columbia Oil and Gas Commission (BCOGC)** – Tupper Montney operations are conducted outside the BCOGC induced seismicity traffic light protocol areas.
- **Texas Railroad Commission (Texas RRC)** – Although the Texas RRC has no induced seismicity regulations for the Eagle Ford Shale, Murphy has voluntarily adopted the Texas Oil & Gas Association (TXOGA) recommended best practices initiative on induced seismicity.

Murphy has developed a robust Induced Seismicity Protocol to manage induced seismicity and ensure continued safe and responsible operations for the Kaybob Duvernay, where anomalous induced seismicity occurs. The operational procedures documented in the protocol are updated for each pad in the Kaybob Duvernay and applied more regionally in the Tupper Montney and Eagle Ford Shale.

Murphy is also an active participant in industry associations that support knowledge sharing and induced seismicity research. In Canada, Murphy is aligned with the Canadian Association of Petroleum Producers (CAPP) and participates in its induced seismicity working groups for both the Kaybob Duvernay and Tupper Montney. In Texas, Murphy is one of the founding members of the Eagle Ford Induced Seismicity Working Group. Murphy also supports three-way collaboration among industry, regulatory and academia participants, which furthers the understanding of potential causes and mitigation steps to manage induced seismicity.

## Waste Management

### Onshore

All waste generated on our sites, including from our drilling, completions and production operations, is managed in accordance with the jurisdictional laws, regulations, industry best practices and local requirements, as well as Murphy's site-specific waste management plans. A core principle of our plans is the waste hierarchy where we first reuse, then recycle, then recover and finally dispose, where practicable. Waste prevention and reduction at source are Murphy's preferential options and are deployed whenever possible.

### Induced Seismicity Protocol

Threefold Risk Assessment:

- **Area-Specific** – Risks are calculated based on historical induced seismicity compiled from public and industry sources.
- **Pre-Operations** – Risks are calculated based on 3D seismic data where available and specific geologic conditions encountered while drilling the well.
- **Frac Operations** – Risk levels are continually evaluated and updated in near-real time based on recorded induced seismicity.

**Monitoring Plan** – Seismic monitoring provides 24/7 coverage during frac operations, and allows detection and location of anomalous induced seismicity.

**Communication Plan** – A process to manage efficient communication between operations staff and industry, including regulators as required.

**Completions Mitigation Plan** – This outlines potential adjustments to the completion program to manage and further reduce or eliminate induced seismicity.

### Offshore

Murphy undertakes a variety of offshore seismic surveys for phenomena such as shallow drilling hazards, archaeological surveys, pipeline route surveys and hydrocarbon exploration. These surveys are undertaken by specialist contractors, utilizing advanced technology to survey the seafloor and thousands of feet beneath it. Murphy and our contractors adhere to relevant government regulations and industry best practices wherever we operate globally. We also liaise with key stakeholders including fisheries, shipping, marine authorities and recreational vessels, for safe operations and protection of our oceans and critical habitat.

During the drilling process, Murphy stores, treats, transports and/or disposes of generated waste in ways that protect the environment and are based on waste management best practices and principles. We separate, or "strip," fluids from the mud/drill cutting matrix to be reused during the same drilling operation. The fluid can also be stored short term for use on future planned wells on the same multi-well pad. Fluid capture and reuse significantly reduces the volume of base fluid used to drill wells that must be "made up" or added back into the process from well to well, while optimizing the overall well control process. This is commonly referred to as a "closed loop" or "pit-less"



drilling system, a system that reduces the overall volume of waste generated and increases the rate of reuse through the use of tanks, screen shakers, centrifuges and vacuum trucks. An ancillary benefit of closed-loop systems is the ability to forgo the need for supporting pits or sumps, directly reducing construction costs, improving safety, reducing environmental impacts and improving overall wellbore economics. All waste streams left over from drilling operations are transported to approved oilfield waste management facilities, where they are treated and disposed following safety and environmental protocols. We carefully manage every load through waste characterization and classification, manifesting and tracking processes. No residual waste volumes are left on-site after a rig is moved from location.

Oilfield waste management facilities used by Murphy undergo rigorous initial permitting requirements and adhere to continuous maintenance and reporting obligations in order to maintain their approvals. This includes where they are initially sited, standards of safety, physical design and operations management and record-keeping practices. Murphy maintains an internal approved waste disposal facility list. We pre-screen and may audit our preferred facility locations to verify compliance with their approvals.

### Offshore

Waste generated from US Gulf of Mexico and international offshore operations is managed in accordance with multiple regulations, including the Clean Water Act (CWA), National Pollutant Discharge Elimination System (NPDES) and Resource Conservation and Recovery Act (RCRA).

Waste generated from operations is segregated based on the categorization outlined in the federal RCRA regulations. Depending on the components within this material and the process in which they are generated, we manifest and ship these items for onshore disposal as hazardous or nonhazardous. The onshore disposal facilities are audited by Murphy to ensure that correct handling measures are being taken and that disposal is compliant with state and federal regulations.

Drilling and production waste is managed in accordance with NPDES parameters, which includes daily visual monitoring and periodic sampling. Compliance with this system is reported quarterly to the EPA.

We use specific synthetic-based drilling fluids that are less harmful for the environment in our offshore drilling operations. These fluids undergo regular testing and certification. In addition, the drill cuttings are processed offshore in order to reduce retention on cuttings prior to overboard discharge. Before discharging to the sea, the estimated synthetic drilling fluid retention on cuttings is verified and recorded, using the analytical method mandated by the EPA.

Food waste from the galley is macerated on the platform or vessel and discharged overboard, in compliance with international regulations (MARPOL Protocol). Black water is treated using a marine sanitation device, which is inspected and certified annually in accordance with US Coast Guard regulations. The concentration of oil in discharged bilge water must meet MARPOL standards, which is achieved by using an oil/water separation system, prior to discharge.

## Spotlight: Using Digital Innovation to Maximize Environmental and Operational Performance

Murphy utilizes predictive analysis, big data and artificial intelligence as part of a technology-based approach to preventing and managing spills, maintaining assets and conducting drilling and completions operations.

For example, we use enhanced computer models and databases to assist in risk-based asset integrity management, along with scheduling proactive maintenance and repairs when recurrent issues are identified. We also use a collection of mobile-based applications, as well as our onshore Remote Operations Center (ROC), to address real-time situations, including remote shutdowns, with operator route optimization.

These applications help us avoid potential incidents and respond more quickly to out-of-usual operating parameters. This allows us to automate field task scheduling and to optimize route scheduling by vehicle GPS-tracking. The mobile applications also provide remote troubleshooting assistance and just-in-time training for technicians in the field via Augmented Reality (AR) technology. In addition to improving performance and reducing potential environmental incidents, these systems also reduce emissions and safety risks by minimizing the driving time spent manually checking equipment.

We are also applying big data and technological solutions to optimize our drilling, completions and production processes. For example, we are developing a way to share drilling performance data across multiple rigs to enable real-time optimization, rather than waiting until the wells are drilled. This further enhances our machine learning, which improves predictions and optimizes field development programs, including well targeting and spacing through fiber optics, micro seismic, seismic inversion and fully coupled 3D models. Process improvements are often driven by the need to integrate systems and improve digital maturity for gapless data. We invest significant time and effort to normalize and clean the data, so decision-makers can work with more reliable data. For example, our completions hydraulic fracturing dataset employs fuzzy logic to establish the link between the completions data and other data sources, like geology, drilling and reservoir.

Murphy also works to improve onshore and offshore rig efficiency through technologies such as managed pressure drilling and automated rig technology, which focuses on components such as safety alerts, and more efficient drilling speeds. This enables us to lower maintenance needs and conduct safer operations.

## Remote Operations Center

Murphy's 24-hour Remote Operations Center (ROC) enables the automatic tracking of key performance indicators and other analytics of our onshore operated production facilities and wells. It also manages task assignments and route optimization with field operators and maintenance through an Integrated Operations Platform (IOP). The centralized location for onshore drilling, completions and well management improves our production, safety and environmental performance by bringing together key information and experts in one location.

The ROC monitors pipeline pressures 24 hours a day, which prevents spills and also improves safety and environmental performance by reducing the time technicians spend on the roads, reducing emissions, and by enabling faster response times.

This center achieves real-time frac optimization, along with multidisciplinary interaction, with a focus on completions and minimizing impacts between the other wells. Technicians monitor managed-pressure drilling and casing flotation for challenging wells, along with re-fracs, pre-loads, sequencing and potential cube development to enhance well designs and continually improve execution.

Murphy's IOP is a proprietary mobile tool for onshore task management, Permit to Work and Job Safety Analysis. Through this app, the ROC technician assigns tasks to specific field operators and maintenance based on location and expertise, prioritizing responses to safety, environmental and production impacts, and monitors their progress. This improves the company's safety culture, reduces downtime and provides valuable insights into making the business more efficient. The drive to meet corporate goals leads to high-impact digital solutions like the Global Downtime Report, which provides a global perspective on operational downtime data related to drilling, completions and production operations.

## Offshore Real Time Monitoring

During offshore rig operations, real-time data is generated and collected on the rig and used by personnel in the decision-making process. Critical operations and parameters that are monitored include subsea and surface blowout prevention (BOP) control systems, the rig's active fluid circulating system, and the well's downhole conditions, all key elements of production, safety and environmental performance. Murphy has developed a plan to monitor and store this data, per regulatory requirements for providing technical support and access to onshore expertise, while maintaining situational awareness on the offshore facility.

## Murphy Labs

Murphy Labs, known internally as mLabs, is a centralized portal that uses virtual project teams to globally integrate individual expertise, particularly as it pertains to technology. This portal provides a collection of cross-discipline, cross-functional solutions for business units through dashboards, apps, videos and tutorials created to resolve problems identified by employees and contractors. Ultimately, these creations improve operational efficiency and increase awareness of safety hazards, enabling staff to work smarter and accomplish tasks in less time. The virtual project team's expertise in keeping up with the latest infrastructure options often leads to the implementation of software that makes the business more responsive, limits the number of outdated legacy programs and further accelerates digital transformation efforts.

Key examples of mLabs' work include:

- **Gulf of Mexico production dashboard** – a tool developed in-house collaboratively by engineers, field operators and developers to amplify production surveillance. The tool encompasses several dashboards that allow engineers to accurately monitor well performance across all assets in the Gulf of Mexico. Production engineers see performance trends that allow for quick decision-making and further analysis where appropriate, utilizing nodal analysis to evaluate well and integrated flowline performance for our fields. Network models are currently in place for all critical subsea assets and expected to be in place for all assets by year-end.
- **HSE Safety Observation Program (SOP)** – a mobile platform for workers to document safety observations real time while in the field. This data is then processed to assist in identifying hazards, predict trends, take corrective action and reinforce positive behavior, while improving overall safety performance. See the Protecting Our People section for more information on our SOP program (page 45).
- **COVID-19 tracking app** – During the pandemic, mLabs designed and implemented an easy-to-use COVID-19 tracking app that executives used to make educated decisions that directly impacted personnel health and safety while operating in the new frontier of a remote workforce.

# Protecting Our People



**We aim to create a safe working environment in which everyone goes home safe at the end of every day.”**





Murphy is committed to conducting business in a manner that protects the health, safety and security of all personnel, including employees, contractors and partners, as well as the communities in which we work. We aim to create a safe working environment in which everyone goes home safe at the end of every day.

Our comprehensive [Worldwide Health, Safety and Environmental Policy](#) and HSE Management System apply to all Murphy operations worldwide. Murphy's HSE Policy and management system are based on industry practices and our extensive experience. We strive to achieve top-quartile safety performance among our peers.

## Health and Safety Oversight

In 1993, the Murphy Board of Directors established a Health, Safety and Environment (HSE) Committee to govern the company's health, safety and environmental activities. In 2020, the HSE Committee expanded its responsibilities to include corporate responsibility matters, thus being renamed to the Health, Safety, Environment and Corporate Responsibility (HSE&CR) Committee. The HSE&CR Committee meets at least twice annually to receive relevant updates and review policies, compliance reports, goals and performance data. In addition, HSE updates are provided at each Board meeting. Further detail on the HSE&CR Committee and corporate oversight of climate change initiatives can be found on page 21 of this report.

The execution of Murphy's HSE Policy lies with the President and Chief Executive Officer. That responsibility is supported by the HSE Executive Management Advisory Committee (EAC) comprised of the Executive Vice President, Operations; Senior Vice President, Technical Services; Vice President, Health, Safety and Environment; and General Manager, Drilling and

Completions. The EAC works to ensure that the company has appropriate management systems in place to monitor and review compliance with applicable rules, regulations, industry standards, protocols and international conventions. The President and Chief Executive Officer and the EAC set goals for continuous improvement and receive updates on implementation and progress made on these initiatives.

Implementation of Murphy's HSE Policy is assigned to the Vice President, Health, Safety and Environment. This role reports to the Senior Vice President, Technical Services, who reports directly to the President and Chief Executive Officer. Altogether, Murphy executives receive weekly reports on HSE activities and results.

Safety has been included in our compensation plan since 2008; in 2020, the safety weighting was 7.5% for the company's Total Recordable Incident Rate (TRIR), and the environmental weighting for our global spill rate was 7.5%. In 2021, we further added an annual GHG emissions intensity target metric to the plan.



## Health and Safety Management System

We strive to achieve incident-free operations through continuous improvement processes managed by Murphy's HSE Management System (HSE-MS), which engages all personnel, contractors and partners associated with Murphy operations and facilities, and provides a consistent method for integrating HSE concepts into our procedures and programs.

### The HSE-MS consists of three levels

- **Level 1** – Direction is provided by Murphy's HSE Policy
- **Level 2** – Expectations are articulated in an HSE-MS framework document and associated global standards
- **Level 3** – Operational execution ensures implementation of the expectations



### The HSE-MS framework is organized around 11 elements

Within each element is a set of expectations. Many of these expectations are supported by global standards and detailed programs, plans, procedures and work tools. Elements include management and employee commitment, contractor management, training, emergency response, incident reporting and investigation, and evaluation and improvement.





## Health and Safety Certification and Audit

Our HSE-MS and Global Standard for Evaluation and Improvement require each Murphy business unit to conduct internal HSE field audits every three years.

On-site HSE inspections are conducted frequently and, in many cases, daily. We identify opportunities for improvement during this process and create corrective action plans to ensure that all items are addressed. We identify any nonconformance and submit improvement actions to business unit leadership.

At our US offshore facilities, a third-party audit is conducted as part of the requirements for the Center for Offshore Safety's Safety and Environmental Management System (SEMS) Certification. The most recent audit was completed in January 2019, in accordance with the regulatory three-year requirement. Murphy US offshore is currently in the process of selecting a third-party auditor for our upcoming 2021 SEMS audit.

The US Bureau of Safety and Environmental Enforcement (BSEE) conducts regular inspections of our offshore facilities and drilling rigs to ensure safety and environmental compliance across our Gulf of Mexico operations.

Murphy contracts with independent, third-party rig quality assurance audit companies who advise on HSE risk mitigation. Specific activities undertaken by expert third parties include:

- Performing electrical and mechanical inspections of key drilling machinery and components on the rigs
- Inspecting key safety components of the control systems on the rigs
- Reviewing any current acceptance test plans and determining relevant sections for software, network and controls testing
- Ensuring that vendors' changes to software and related control systems have been documented, and that backups are available
- Ensuring compliance with software configuration processes

In 2020, Murphy's Canadian HSE Management System received a Certificate of Recognition (COR) from Energy Safety Canada. Energy Safety Canada is the certifying partner for the Canada Partnership in Injury Reduction (PIR), established through the Canada's provincial Workers' Compensation Boards (WCB).

The COR program has become the national standard for safety awareness, accreditation and improvement in Canada. The program is designed to improve worker safety and reduce costs due to favorable insurance rates and potential reduction in lost productivity, replacement worker training, and/or property damage. After obtaining certification, we have continuously improved our performance through audits, scoring higher year after year as a result of internal program enhancements. We will continue to perform annual internal validation audits, with an external audit cycle every three years.



Safety must be a top priority of every employee, every day. We work hard to build a culture of safety across our organization. Key initiatives in addition to our regular training and exercise drills include:

- **Stop Work Authority** – Every employee and contractor has the authority, the right and the obligation to stop unsafe work. This is a fundamental tenet of Murphy's safety culture and it applies to everyone, including new crew members, experienced crew members, supervisors, managers, and service company personnel. Elements of Stop Work Authority are: (1) You must stop the job if you see an unsafe act or condition. (2) You must stop the job if you are unsure of the plan, or you see someone else who is not sure. (3) If conditions change, you must stop the job and confirm that your initial hazard controls are still adequate. (4) In all cases, when you stop the job, if you cannot make it right yourself, discuss your concerns with your supervisor before starting work again. Murphy's executive team stands firmly behind Stop Work Authority, empowering all workers to take immediate action to preserve their own safety and the safety of those around them.
- **Safety Observation Program (SOP)** – The SOP is a smartphone-based application that allows workers to record and document safety observations in real time in the field. This repository of data provides the basis to analyze safety trends across our field operations and allows us to focus our repairs and maintenance, training, and prevention efforts to improve overall safety performance. We saw an increase of over 1,000 SOPs in 2020 from the prior year, indicating that workers are engaged in the observation process and using the reporting systems effectively.
- **Hazard Hunts** – We initiated multidiscipline, business unit-specific Hazard Hunts to identify and mitigate potential safety and environmental hazards in the workplace. As part of these Hazard Hunts, we held a "Safety Blitz" in the US and "Powerplay" in Canada, implementing a field-level competition where teams submitted safety observations across our operations. With the success of the 2019 efforts, we engaged the field leadership in 2020 to ensure that we listened to the opportunities for improvement to make this initiative more successful. For our offshore teams, we have also instituted weekly Risk-Based Inspections (RBIs), in which small crews focus on equipment or processes to ensure we are capturing any potential hazards.
- **Safety Leadership Training** – Our North America onshore operations engaged in a third-party training program titled "Safety Excellence for Supervisors, Managers and Workers." In addition, we developed an in-house Safety Leadership program instructed by the HSE department.
- **Safety Stand-Downs** – We continue to incorporate Safety Stand-Downs as a way to bring senior management, employees and contractors together to demonstrate a unified commitment to safety. We also utilize Safety Stand-Downs on a location-specific basis to address any immediate concerns or issues.
- **Contractor Engagement** – Because contractors consistently make up over 80% of our work hours, we focus on contractor engagement at two levels: (1) the executive level, where Murphy's senior leadership meets with key contractors to set clear expectations of our commitment to safety in the workplace, and (2) small group contractor engagement sessions in the office and field locations to provide the same message, while also creating an opportunity to receive feedback and input on how we can collaborate and improve our safety performance.
- **Process Safety Management (PSM)** – Asset integrity is at the core of our PSM program and plays a key role in preventing serious incidents. We have more than 835 miles of pipelines and gathering systems across our North American onshore business, approximately 2,200 pressure vessels across over 30 onshore central facilities and five operated major offshore facilities. We established a baseline by measuring our Tier 1, 2, 3 and 4 PSM events, which are important leading indicators in preventing serious incidents from occurring. For additional details, please refer to Process Safety and Asset Integrity in the Environmental Protection and Conservation section (see page 34).
- **Using big data and technology** – Murphy targets safety improvements and efficiency gains throughout our operations with tactics such as data sharing and machine learning, which optimize field development programs and thereby reduce potential safety hazards and environmental impacts and waste. Technologies such as managed-pressure drilling and automated rig technology include components such as safety alerts, total on-bottom time and real-time directional drilling, to meet maintenance needs and ultimately achieve safer operations. Further detail on Murphy's technologies can be found on page 39 under Digital Innovation.
- **Life Saving Rules (LSR)** – In 2020, we launched the nine International Association of Oil and Gas Producers (IOGP) Life Saving Rules, plus a tenth rule, Fit for Duty, as a clear training and communications platform for safety risks and mitigations. In addition, we are implementing a "Lifting & Rigging" campaign to focus attention on preventing crane incidents in the Gulf of Mexico. We have also adopted a goal of reducing lifting and rigging-related incidents by 50% in 2021 compared to 2020, in alignment with BSEE's goal.

Safety must be a top priority of every employee, every day.

## Safety Performance Monitoring and Measuring

As a company, we take our commitment to safety very seriously, and actively assess and measure our safety culture.

In 2020, our safety metrics continued to show marked improvement. The two key drivers were the lower levels of activity than in prior years, and the result of the focused safety campaigns we rolled out in 2019 and 2020. We are focused on further improving performance as we ramp up activities in the coming year.

Our Total Recordable Incident Rate<sup>9</sup> (TRIR), including employees and contractors, was 0.28 in 2020, a significant improvement of 46% on 2019. Our Lost Time Incident Rate<sup>10</sup> (LTIR), inclusive of actual contractor hours worked, stayed at 0.08. We did not have any work-related fatalities in 2020.

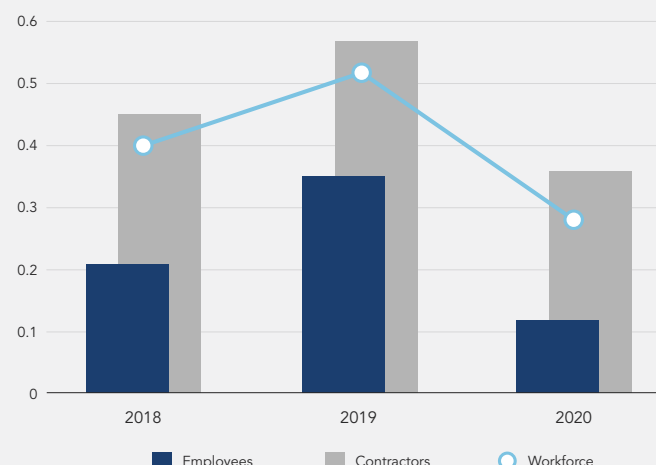


improvement of  
**▼46%**

TRIR 2019 to 2020  
Total Workforce

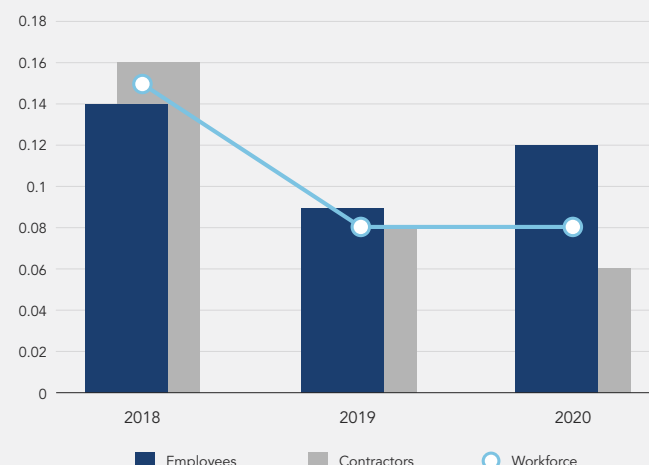
### Total Recordable Incident Rate

Per 200,000 Work Hours



### Lost Time Incident Rate

Per 200,000 Work Hours



This year, we are also reporting the employee Preventable Vehicle Incident Rate (PVIR) for our US onshore operations. PVIR is calculated by multiplying the number of preventable vehicle incident events by one million miles and then dividing by the total miles driven. Between 2018 and 2020, the PVIR fell 30%.

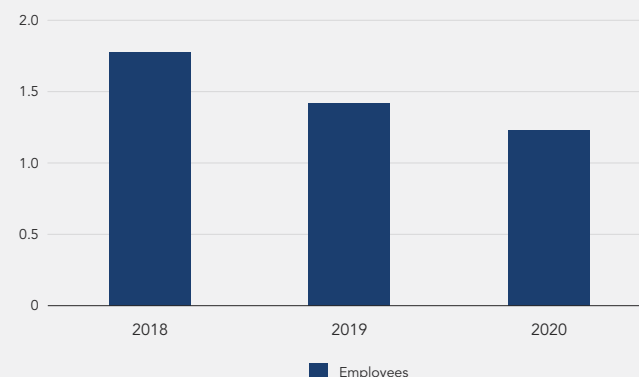


improvement of  
**▼30%**

PVIR 2018 to 2020

### Preventable Vehicle Incident Rate (US Onshore)

Per Million Miles Driven



<sup>9</sup> Number of OSHA recordable injuries and illnesses throughout the year per 200,000 actual hours worked

<sup>10</sup> Number of OSHA recordable incidents that result in time away from work throughout the year per 200,000 actual hours worked

## Comprehensive Safety Key Performance Indicators (KPIs)

In addition to reporting our Total Recordable Incident Rate (TRIR), Lost Time Incident Rate (LTIR), number of fatalities and Preventable Vehicle Incident Rate (PVIR), we also internally track the following safety performance indicators to drive continual improvements in safety performance:

- First-aid incidents
- Near-miss incidents, including high potential near-misses that trigger formal incident investigations
- Non-occupational incidents
- Dropped objects
- Process Safety Management Metrics (PSM)

## Contractor Management

Contractors play a significant role in our operations, and represent more than 80% of the workhours performed. Selecting and collaborating with our contractors is vital to ensure a unified commitment to maintaining a safe place to work, and ultimately improving our HSE performance.

When choosing to partner with a service provider, Murphy first utilizes ISNetwork (ISN), a global leader in supplier and contract management, to assist in pre-screening by assessing HSE policies, performance and internal HSE management systems. For select major contractors, Murphy goes a step further and performs a detailed bridging process, through which we evaluate all the service provider's HSE policies and procedures individually against Murphy's policies and procedures. The highest level of HSE performance standards are followed for workplace execution.

Murphy requires contractors and subcontractors entering Murphy-operated locations to have the same safety industry training certifications as employees. All personnel, including contractors and subcontractors, working at Murphy locations must have basic industry safety training certifications such as SafeLandUSA and Energy Safety Canada – common safety orientation for onshore, plus SafeGulfUSA, HUET, SEMS Awareness and USCG Marine Trash and Debris Water Survival for US offshore. In addition, contractors must attend Murphy's HSE Orientation before starting work at a Murphy location. Murphy maintains a Qualified Supplier List (QSL) for each business unit, to identify service providers that are permitted to work at Murphy locations.

Throughout the year, Murphy hosts contractor engagement sessions with service providers in each of our business units. These structured workshops review HSE performance, develop joint performance goals and share lessons learned. To further promote safe and environmentally compliant performance, Murphy has established KPIs with several major service providers, and the KPIs are continuously reviewed throughout the duration of their contracts. Additionally, Murphy HSE personnel and ISN regularly conduct third-party vendor audits.

Murphy requires our third-party contract companies to conduct random drug testing on their employees. To supplement this, in 2020, our US offshore group contracted DISA Global Solutions to start the process of implementing standardized random drug testing for all contractors and vendors in the Gulf of Mexico. This was rolled out in 1Q 2021. DISA is linked with ISN, thus allowing us to monitor companies and individuals flying to our offshore facilities. DISA allows Murphy to effectively manage third-party screening under a comprehensive umbrella, across all registered oil and natural gas operators. Our US onshore team will be monitoring the effectiveness of the offshore program, and aim to implement the program by 4Q 2021.





## Emergency Response and Preparedness

As we work hard to minimize environmental and safety risks and hazards, it is critical that we prepare for events that have the potential to negatively impact our employees and contractors, facilities, operations, the environment or the general public and other stakeholders.

Any stakeholder can report an emergency, and emergency phone numbers are posted at every field location.

Our Emergency Response and Crisis Management Plan applies to any emergency event. As part of this plan, Murphy has a dedicated Manager of Security and Emergency Response, who is responsible for all emergency preparedness and response-related activities.

We have developed and implemented a three-tiered approach to emergency response:

1. Emergency Response Teams at the field level
2. An Incident Management Team at the mid-senior management level in the office
3. A Crisis Management Team at the executive level

Every operating office location maintains an Incident Management Team, and Well Containment Teams are established for all active wells.

The Incident Management Team structure includes a Public Information Officer, who prepares messages, communications and press releases per the needs of the team. For emergency messages, we utilize a proprietary communication system, Murphy Alert (MIR3), which allows us to use a combination of text, email and voice notifications, and allows for responses.

Because we recognize that our emergency response plans are most effective when accompanied by regular and comprehensive training, we maintain a global training and drill schedule across all business units, providing well containment and spill exercises, Incident Command System training and business continuity planning exercises. Training and drills comply with all relevant regulations and engage local emergency response groups.

In 2020, we conducted more than 10 regular training and exercise drills across our business.

We also revamped our Business Continuity Plan. Each business unit performed a deep dive into the resources needed to conduct business as usual following a major event, such as a hurricane. We partnered with a third-party crisis and emergency management specialist firm to streamline our process and turn Murphy into an industry leader with our newly revised plan. A drill was completed in 1Q 2021 to exercise the plan. We conducted an after-action review to ensure our processes are effective across the board.

### HWCG, Spill Response and Emergency Preparedness

Murphy is also an active member of HWCG, a consortium of 14 operating companies, which provides rapid access to well containment resources and mutual aid personnel. This group also shares access to source control containment equipment and resources (capping stacks and associated equipment) for the US Gulf of Mexico. In addition, HWCG provides training and practical knowledge opportunities for its members through annual well containment drills and workshops.

Murphy conducts its own annual drills and training of our internal source control and spill response teams, to demonstrate our ability to respond to any incident, both onshore and offshore. These drills comply with all relevant regulations in countries where we operate and engage local emergency response groups, such as Clean Gulf Associates (CGA), Marine Spill Response Corporation (MSRC), and Oil Spill Response Ltd. (OSRL), as well as other key third-party specialists.

## Physical Security

Murphy relies on multiple resources for access control, visitor management, site monitoring and surveillance and security assessments, along with security guards in the field and police officers in the headquarters building. We use a third-party vendor to provide and manage these services, and they report to the Murphy Security and Emergency Response Manager.

We provide security training to employees and conduct security exercises and drills. The Security and Emergency Response Manager belongs to multiple security and law enforcement working groups and committees, monitors security events and intelligence reports from law enforcement. We also utilize third-party service providers to obtain real-time situational awareness bulletins, and as necessary, provide emergency alerts to staff.



# Investing in Our People



**We believe in creating an inclusive culture where members of our workforce support and respect each other.”**



Our people are our most valuable resource. At Murphy, we believe in creating an inclusive culture where members of our workforce support and respect each other. We actively encourage and value everyone's perspective. The Vice President, Human Resources and Administration has overall managerial accountability for our human capital management efforts. Given the importance of human capital development and management as a strategic capability to the company, our Board regularly reviews the programs and progress.

## Diversity, Equity and Inclusion

The rich experiences and backgrounds of our employees strengthen our company, create a productive workforce and contribute to our success.

We partner with many organizations to increase the diversity of candidates in our talent pipeline. All of our open positions are sent through eQuest, which distributes the roles to diversity and inclusion organizations. Open positions are posted on job posting sites such as the VeteranJobListings, the Society of Women Engineers and the National Society of Black Engineers. We equip managers with tools to assist in the hiring process such as an interview guide to reinforce a fair and equitable process.

In 2020, we launched a video series in which executives shared what diversity, equity and inclusion (DE&I) means to them. The series is expanding to include the voices of employees throughout the organization. A dedicated intranet portal enables employees to explore resources including articles, videos and training that are refreshed regularly to reflect current events. Additionally, we participated in events hosted by the Greater Houston Partnership, including International Women's Day, and attended Women's Energy Network and Greater Houston Women's Chamber of Commerce events both in person and virtually.

Our Human Resources Director of Talent Management oversees our DE&I program. We further strengthened our commitment to DE&I by forming a DE&I committee that includes employees from different experiences, levels and backgrounds. The committee helps determine DE&I focus areas and assists in sharing information and feedback. We have also offered training programs on topics such as workplace diversity and maintaining a cohesive multigenerational workforce, while also sharing resources specific to practicing inclusiveness during a pandemic.

As part of our commitment to promote workforce DE&I, we track age, gender and race/ethnicity for all full-time employees. In compiling the data, we categorize employees according to the US Department of Labor's Equal Employment Opportunity Commission (EEOC) definitions. This year, in response to stakeholders' request for the disclosure of EEO-1 data, we have published our data as at year-end 2020 on page 72 in the Performance Data section. A summary of this data as well as our global representation of women is outlined in the tables below.

<b>Representation of Women<sup>11</sup></b> US and International	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Executive and Senior Level Managers	17%	16%	14%	12%
First- and Mid-Level Managers	20%	20%	22%	17%
Professionals	41%	36%	34%	34%
Other (Administrative Support and Field)	26%	20%	20%	7%
<b>Total</b>	<b>32%</b>	<b>28%</b>	<b>27%</b>	<b>21%</b>

<b>Representation of Minorities</b> US-Based Only	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Executive and Senior Level Managers	5%	9%	10%	12%
First- and Mid-Level Managers	20%	24%	24%	23%
Professionals	28%	25%	29%	33%
Other (Administrative Support and Field)	30%	32%	36%	31%
<b>Total</b>	<b>26%</b>	<b>27%</b>	<b>29%</b>	<b>30%</b>

<sup>11</sup> 2017 and 2018 data includes employees in Malaysia.

The decrease in the percentage of women from 2019 to 2020 is related to two factors. First, when our offices in El Dorado, Arkansas and Calgary, Canada closed, we eliminated the majority of the roles from those offices, and those offices historically had a high percentage of women employees. Second, we focused our hiring efforts on field operations, which historically attract a pool filled mostly with men. Murphy is committed to increasing our representation of women throughout the company and has partnered with organizations to support our efforts.

We are gratified that outside organizations recognize our efforts. One of our senior leaders received recognition as one of the “40 under 40” by the Houston Business Journal. In 2021, the National Diversity Council recognized two of our senior executives, issuing them the prominent awards of “Top 100 Diversity Leaders in Energy” and “Leadership Excellence Award.” Each executive was also asked to speak at various events, including the National Diversity and Leadership Conference, hosted by the National Diversity Council.

## Benefits and Wellness

Murphy provides a comprehensive benefits package designed to drive employee wellness and preparedness for their future. This includes excellent health coverage – medical, dental and vision – for employees and their family. Murphy also provides a defined-benefit pension plan and a defined contribution savings plan designed to assist employees in building savings for retirement.

In 2020, we expanded our benefits package to include:

- **Vacation Policy** – Eligible employees may roll over a week of vacation each year
- **Telecommuting Policy** – Eligible employees may work up to two days per week from home

We will continue to build upon our DE&I efforts, with a focus in 2021 on enhancing recruiting processes, targeted and elective training and development opportunities, and expanding partnerships with minority- and women-owned businesses.

### Pay Equity

Murphy conducts a biannual process to evaluate base pay equity across the organization by position, with a specific focus on equity across gender and race/ethnicity diversity. Murphy quickly works toward closing gaps if any issues are identified.

### Local Hiring

We prioritize hiring locally, which allows us to contribute to the communities in which we operate. For our operations outside the US, the majority of our people are from the local host country. When immediate talent is not available, we ensure proper training is offered so that we may work toward nationalizing positions.

### Wellness

Murphy offered a host of programs in 2020 to support employees through the pandemic. Several employee assistance sessions focused on ways to manage stress during difficult times. In addition, a new dedicated website provides information on staying healthy, including webinars from our medical director to provide guidance on well-being and address employees’ concerns. Finally, employees were educated on and encouraged to use telemedicine resources.

In further support of employee wellness, Murphy sponsors employees and contributes to various events throughout the year such as the Project Healing Heroes, which raises awareness for veterans and first responders fighting PTSD.

### Additional Benefits Include:

- |   |  |                                    |
|---|--|------------------------------------|
| + Birth and Adoption Leave for Mothers and Fathers  | + Defined-Contribution Pension Plan with Company Match in Canada | + Flexible Health Spending Account |
| + Personal Paid Leave for Matters Such as Attending School Functions or Personal Business | + Employee Assistance Program                                    | + Employee Educational Assistance  |
| + Defined-Benefit Pension Retirement for All Eligible Employees                           | + Life and Accidental Death and Dismemberment Insurance          | + Service Awards                   |
| + 401(k) Savings Plan with Company Match in the US  | + Long-Term Disability Insurance                                 | + Travel Assistance Program        |
|   | + Occupational Accidental Death Insurance                        |                                    |



## Training and Development

We formally manage our employees' performance through regular development discussions and assess each individual's performance as well as behaviors that are tied to our Purpose, Mission, Vision, Values and Behaviors. Leaders and employees formally connect on a quarterly basis to reflect on developmental growth and future opportunities.

To help our employees develop and expand personal and professional skills, Murphy offers a variety of enrichment opportunities and job-related training throughout the year, including in-house, external and virtual seminars and workshops. Additionally, we sponsor employee participation in industry and professional organizations.

Leadership and professional development investments in 2020 included:

- Nautilus Training Alliance for subsurface technical training
- Online My Murphy Learning programs for all employees
- Opportunities for all employees focused on increasing productivity and improving effectiveness

Murphy employees represent the company through several professional networks, affording them an opportunity for learning and development, sharing best practices and expertise throughout the industry and supporting sustainable development in our local communities. Examples include:

- American Association of Petroleum Geologists (AAPG)
- American Chamber of Commerce (AmCham)
- American Petroleum Institute (API)

- Calgary Exchange Group (CEG)
- Canadian Association of Petroleum Producers (CAPP)
- Greater Houston Partnership
- Greater Houston Women's Chamber of Commerce
- Houston Business Journal Diversity Events
- International Petroleum Industry Environmental Conservation Association (IPIECA)
- National Ocean Industries Association (NOIA)
- Oil and Gas Diversity Council
- Society of Exploration Geophysicists (SEG)
- Society of Petroleum Engineers (SPE)
- South Texas Energy & Economic Roundtable (STEER)
- Women's Energy Network (WEN)

In 2020, through My Murphy Learning, our internal Learning Management System, we offered our workforce more than 8,469 professional development courses and 604 technical courses, with training time totaling 10,199 hours, for a total spend of approximately \$245,000.

Murphy leadership strongly believes in encouraging and supporting its people who wish to continue their education. Murphy offers an Employee Educational Assistance Program, through which the company contributes toward the cost of tuition, textbooks and some required fees incurred at accredited colleges, universities or trade schools.



## Employee Engagement

We believe hearing from our employees leads to the best decisions. In 2020, we conducted surveys to better understand the needs of the employees, including a survey specifically designed to identify concerns surrounding returning to the office. We also conducted town halls throughout the year, which gave employees multiple forums to be heard.

Murphy's Ambassador Program is comprised of employees from different locations and roles throughout the organization who serve as a representative for all employees. The mission of the Ambassadors is to be the voice of every employee, to live out the Purpose, Mission, Vision, Values and Behaviors of Murphy, and to empower other employees to do the same. The Ambassadors help create a sense of community and strengthen the company culture by championing company initiatives, assisting in the dissemination of information and constructively circulating feedback from employees to the executive team.

### Retention and Turnover

We track global voluntary employee turnover, broken down by geography. This data is shared on a regular basis with our leadership team, who use it to develop our human capital strategy. In 2020, the company's global voluntary turnover rate was 6%, which is lower than industry survey data.

We believe this turnover rate is low, due in part to frequent communication between executives and employees through quarterly Town Hall meetings, the Ambassador Program, training and development opportunities, employee recognition programs, and platforms for open Q&A and benefits discussions.

Workforce Metrics <sup>12</sup>	2017	2018	2019	2020
Head Count (Total Company)	1,128	1,108	823	675 <sup>13</sup>
Median Age	43	42	43	42
Employee Turnover (Voluntary)	7%	8%	10%	6%

## SUPPORT EACH OTHER and MAKE IT BETTER

### Employee Disaster Relief Assistance

We established the Murphy Oil Corporation Disaster Relief Foundation in 2010 to aid employees who have been impacted by a natural disaster. The Foundation is funded through contributions from employees, Board of Directors and retirees. In 2020, employees affected by Hurricane Delta and Hurricane Laura received assistance through this resource. In 2021, the Foundation also helped employees impacted by the unprecedented winter storm in Texas. This fund epitomizes how our employees live out our values of supporting each other and making it better.

<sup>12</sup> 2017 and 2018 data includes employees in Malaysia.

<sup>13</sup> The head count reduction in 2020 was primarily driven by the closure of the El Dorado, Arkansas and Calgary, Canada offices.



# Community Engagement



**Being a good corporate citizen and community member goes beyond business – it's core to who we are as a company.”**

Positive relationships with the local communities in which we work is critical to our operations. But being a good corporate citizen and community member goes beyond business – it's core to who we are as a company.

## Working With Communities

We seek to participate in constructive community engagement and minimize negative impacts. Before we make an investment or commence any new operation, we apply several key processes and practices to ensure we have identified local community and stakeholder concerns and are effectively mitigating any known associated risks.

Murphy communicates with host country and community stakeholders, including regulators, nongovernmental organizations and other policy influencers, to better understand the issues applicable to our operations and to mitigate potential risks to the company's license to operate. This engagement is carried out in accordance with our [Code of Business Conduct and Ethics](#).

When we are considering starting a business operation in a new country, our process assesses the nontechnical, above-ground risks. This includes an assessment of key demographics, geography, economic standing and outlook, geopolitical relations and political system, regulatory and fiscal regime, and political and security risks.

Negotiating and entering production-sharing contracts or other agreements with international host countries often presents opportunities to support the local community through:

- Prioritization of local suppliers
- Investment opportunities for local content
- Specifications for local companies or workers
- Commitments to social investment programs, to address the development needs of the community and/or contribute to education improvement and work-skill development of host country populations

### Understanding and Responding to Community Feedback

In the US, community stakeholders can raise concerns or grievances directly with the Land Department using an [owner relations number and website](#). Murphy landowners are assigned a surface landman for any concerns, and landowners can also reach out directly to their respective landman to address any issue.

In Canada, as in the US, community stakeholders can raise concerns or grievances directly with the Land Department team members, and via an emergency contact telephone number maintained by Murphy. The Land Department is responsible for collecting, recording and assessing all community and stakeholder concerns or grievances. The surface land team maintains responsibility for response and resolution, as per the British Columbia Oil and Gas Commission (BCOGC) and Alberta Energy Regulator (AER) public consultation guidelines.

Our rigorous community consultation process is regulated by the AER and the BCOGC. Members of Murphy's surface land team



actively participate on several community relations committees: Canadian Association of Petroleum Landmen (CAPL) Field Acquisition Management (FAM) Committee and the Fox Creek Synergy (FCS) Partnership.

The CAPL FAM Committee's purpose is to bring together operators in British Columbia, Alberta and Saskatchewan to collectively address issues being encountered by the surface land groups of various operators, and collectively find solutions to those issues. The participating operators also discuss continuous improvement and best practices for the industry as it relates to surface land. The FCS Partnership is made up of operators in Alberta and is focused on community engagement, including community and government updates to industry activities, community events (e.g., Day of Caring) and community investment.

In Mexico, Murphy has conducted a social impact assessment and has established responsibilities that are aligned with regulatory requirements, including regular interface with community members, and building consensus on an approach to improve the overall welfare of the communities affected by our operations.

## Human Rights

Respect and dignity for everyone is a cornerstone of the way we do business and to our success. To Murphy, the value “Do Right Always” means that we respect all people.

In 2021, Murphy reviewed its longstanding practices and recognized them in our formal [Human Rights Policy](#). This policy acknowledges our longstanding commitment to the dignity and rights of all people, as well as to our resolve to identify and reasonably eliminate or minimize any negative impact our activities may have on human rights in the communities where we do business. Our commitment includes a complete prohibition against child labor and the recognition that access to water is a fundamental human right. It is further guided by the principles set forth in the [United Nations Universal Declaration of Human Rights](#).

We recognize the function of government as the primary source of policy and protection for human rights and are committed to respect and comply with the laws of the countries where we do business. Our Code of Business Conduct and Ethics further sets forth the expectation that we will do what is right, safe and considerate of the well-being of our people, communities and environment.

Our Board of Directors mandates these policies, which extend to our vendors, suppliers, contractors and partners through our written policies, contracts, directives and training. We encourage feedback and constructive dialogue with all relevant stakeholders, and will provide guidance and annual training to our employees on our Human Rights Policy and the appropriate procedure to promptly address any concerns that may be raised.

### Protecting Indigenous Rights

In Canada, where Indigenous people are members of the local community, our actions are guided specifically by our [Indigenous Rights Policy](#). When engaging and collaborating with Indigenous groups, Murphy will respect the spirit and intent of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its guiding principles, within the context of existing Canadian law and the associated commitments and roles that governments in those jurisdictions have relative to Indigenous groups.

Respect and dignity for everyone is a cornerstone to the way we do business and to our success. To Murphy, the value “Do Right Always” means that we respect all people.

## Investing in Our Communities

We invest in our communities to build the local workforce, expand opportunities and support specific community needs. We view these efforts as much more than philanthropy. They are strategic investments in the communities that support us and increase the critical talents and services we and our communities need.

### Community and Workforce Capacity Building

Murphy is a founding member of the South Texas Energy & Economic Roundtable (STEER) program in the Eagle Ford Shale. STEER was created in large part to support positive developments that are beneficial for the local communities and to successfully integrate the oil and natural gas industry into the region. In January 2020, STEER completed its merger with the Texas Oil and Gas Association (TXOGA).

STEER focuses on several critical community issues, including availability of housing, healthcare services and infrastructure, road safety, local skills development and environmental protection.

During the COVID-19 crisis, STEER identified partnerships to provide essential Personal Protective Equipment (PPE) and other donations to counties, emergency management personnel, volunteer fire departments, law enforcement, food banks,

hospitals and health clinics throughout the Eagle Ford Shale. Volunteers with STEER joined vaccine clinics and donated meals to frontline workers serving thousands of patients from all over the state.

STEER also holds a seat on the City of San Antonio Climate Action & Adaptation Plan Technical Committee. The committee serves as a community stakeholder forum to develop plans to implement climate mitigation and adaptation strategies. STEER continues to partner with local communities, colleges and universities to identify partnerships that will encourage innovation and environmental stewardship.

We also work with the American Petroleum Institute (API), National Ocean Industries Association (NOIA) and local chambers of commerce and business councils to support community and workforce capacity building. Murphy executives volunteer on the boards of several industry, academic organizations and nongovernmental organizations, including the API, American Association of Petroleum Geologists (AAPG), Energy & Geoscience Institute at the University of Utah, Louisiana State University Foundation and United Way Women’s Initiative of Houston.



In addition to collaborating with industry groups, we also work directly to build community and workforce capacity. Though we are no longer headquartered in El Dorado, Arkansas, where Murphy was founded, we continue our longtime commitment to offer opportunities and expand workforce capabilities in the community. We established the [El Dorado Promise Scholarship Program](#) ("Promise") in 2007 to encourage academic success. Through a \$50 million commitment from the company, the Promise enables graduates of El Dorado High School who have been enrolled in the school district since at least the ninth grade to have their college tuition and mandatory fees paid at any regionally accredited university, public or private, in the US (capped at the highest annual resident tuition at an Arkansas public university).

The program has been a remarkable success in many dimensions. The El Dorado Promise has spurred the college enrollment rate of El Dorado High School graduates to surpass state and national levels. In nearly 15 years, more than 2,850 students have received the Promise. They have used their scholarship at 153 different schools in 35 states. Studies done by the Office for Education Policy at the University of Arkansas in 2018 indicate that there was a 16.5% increase in college enrollment after the announcement of the Promise, keeping El Dorado School District enrollment on the rise while enrollment in all nearby communities has declined. In addition, the Promise was associated with an overall 10.7% increase in bachelor's degree completion and a 12.7% increase in bachelor's degree completion for Promise scholars whose high school grade-point average was in the top 50% of their class.



# EL DORADO PROMISE

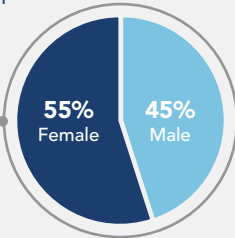
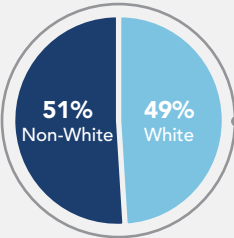


more than

# 2,850

students have been placed in the El Dorado Promise scholarship program

Race/Ethnicity  
Breakdown



Gender  
Breakdown



# 153

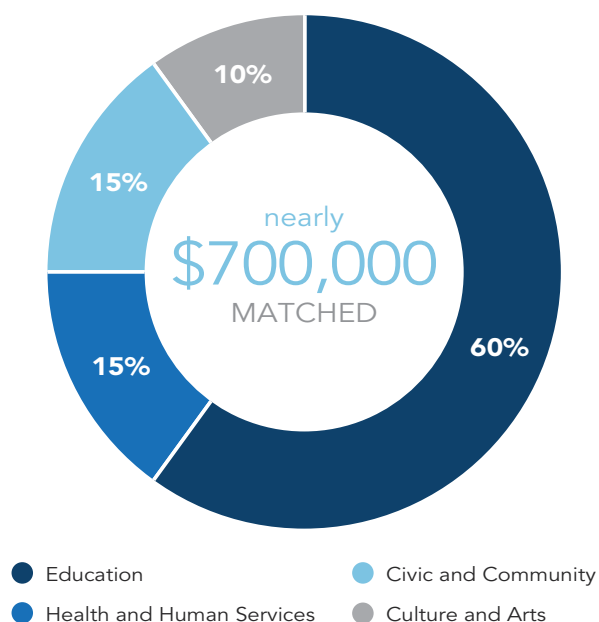
colleges and universities have accepted the graduates of El Dorado High School

## Community Giving and Volunteering

For more than half a century, Murphy has been committed to giving and volunteering in our communities. We have built partnerships with educational, civic and charitable initiatives in the communities in which we operate to support this work. Corporate contributions have ranged from donations to the Calgary Health Trust and Alberta Children's Hospital Foundation in Canada, to supporting social development programs for low-income communities in Malaysia, and youth and communities through the Spindletop Charities in Houston.

We recognize and support the positive impact our employees make. From volunteering as youth sports coaches to working at women's shelters, building homes and planting trees, and serving on city government commissions, school boards and chambers of commerce, Murphy employees give enthusiastically of themselves, and of their time, to strengthen their communities. Through our Employee Gift Matching Program, offered to employees in North America, we match qualified donations on a dollar-for-dollar basis. In 2020, Murphy matched nearly \$700,000 of employee gifts. In particular, we have built a legacy of contributing to educational institutions and programs. Through the Employee Gift Matching Program, the company increases its match of employee contributions 2:1 for educational institutions.

2020 Employee Matching Contributions



## United Way Partnership

Murphy employees annually participate in a campaign to raise funds and volunteer time for the United Way. Murphy's long-term partnership with the United Way began over 50 years ago, and has served to increase employees' awareness of the needs of their fellow citizens. In 2020, Murphy's North America locations contributed nearly \$200,000 to the local United Way through its employees' generosity and gift matching. Murphy is recognized as having achieved [United Way of Greater Houston's 2020-2021 Community Campaign Honor Roll, President's Division](#). Over the last 20 years, Murphy and its employees contributed a total of more than \$15 million to benefit United Way organizations, including the Salvation Army, the American Red Cross and the Boys & Girls Clubs of America.







# Governance and Responsible Business Practices



**Our governance practices provide powerful alignment between our business and ESG goals.”**

Our [Board of Directors and executive team](#) are committed to sustainable business practices, which are premised on our company's purpose, mission, vision, values and behaviors. Murphy's executive team, with the guidance and support of our Board, implements, monitors and, if necessary, adjusts our sustainability efforts to serve the long-term interests of the company and its stakeholders, including the communities in which we operate. Our governance practices provide powerful alignment between our business and ESG goals.

Governance Highlights

Our Board assumes an active role in providing oversight of the management team in developing and executing on our business strategy. The Board is led by strong independent leadership in the form of an independent Chairman, and 92% of our directors are independent. Our Board has adopted governance practices that promote direct accountability to shareholders, including the annual election of each of our directors and the requirement to receive majority support.



Board Expertise

As fiduciaries for shareholders, the Board believes it is important for directors to possess a diverse array of backgrounds, skills and achievements that are crucial to lead the company in challenging times for the energy industry. Our directors' qualifications include experience in finance/banking, human capital/compensation, accounting/audit, law, government relations/public policy, risk management and business development and corporate strategy. In addition, 77% of our directors have experience in the areas of environmental protection, health and safety, and 83% of our directors have expertise in the oil and natural gas industry. For more information on our Board, and to view its members' Skills, Qualifications, and Diversity Matrix, see our [2021 Proxy Statement](#).

Executive Compensation

Sound compensation governance is a pillar of the corporate culture at Murphy. The Board's Executive Compensation Committee and our management team continually seek to improve the alignment of our compensation programs with the interests of our shareholders, with industry developments, and with our ESG goals. Since 2008, our executive compensation plan has included a safety metric in its annual incentive plan performance metrics; in 2020, the safety weighting was 7.5% for the company's Total Recordable Incident Rate (TRIR) and the environmental weighting for our global spill rate was 7.5%. For 2021, we added a metric on a greenhouse gas (GHG) emissions intensity reduction. Metrics are set to deliver top-quartile industry performance, and inclusion of these metrics reinforces the company's commitment to safe and environmentally sound operations.

Sustainability Governance

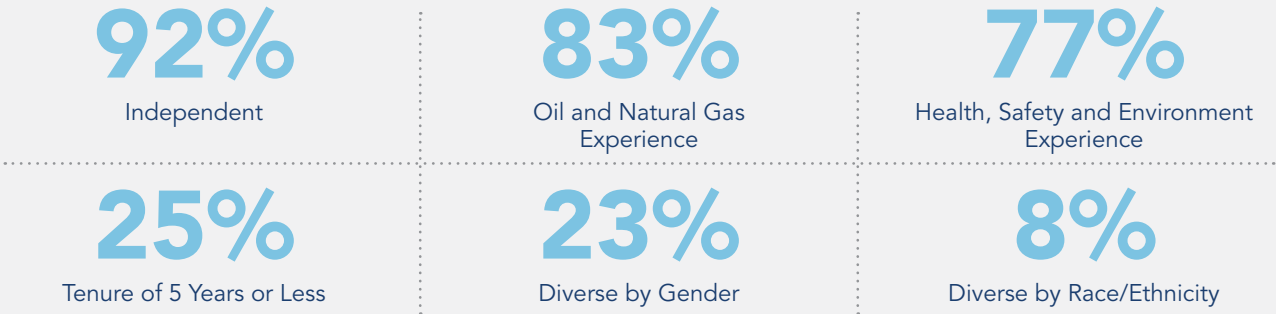
For details on the Board and managerial oversight of sustainability, please refer to Our Approach to ESG in the Introduction section (on page 10).

Expert and Independent Board

- 12 out of 13 directors are independent
- Separate CEO and Chairman
- Board of Directors elected with average vote of 97% over past 5 years
- Long-term industry, operating and HSE expertise



Board of Directors Highlights<sup>14</sup>



14 As of June 2021

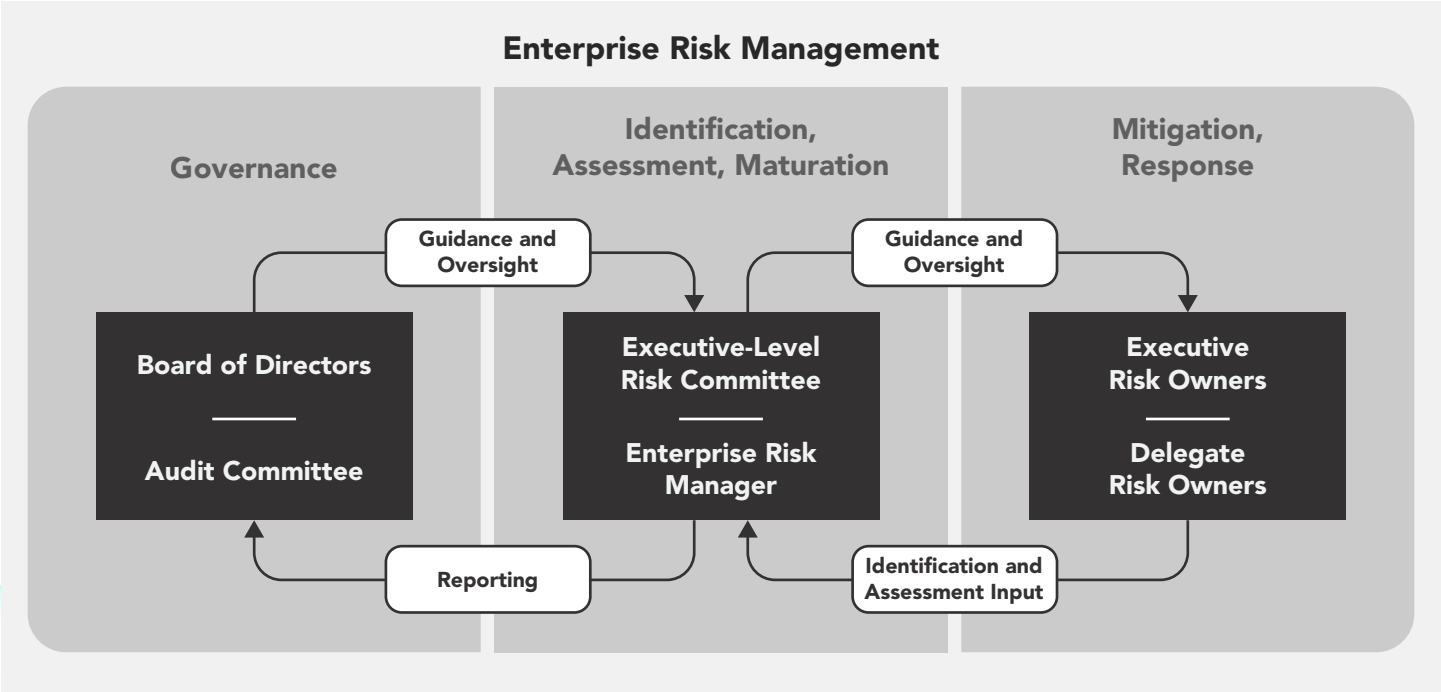
Enterprise Risk Management

Understanding and mitigating our risks informs everything we do and every decision we make. Accordingly, our Enterprise Risk Management (ERM) process is run with the goal of integrating risk awareness and mitigation at all levels of the organization, from strategy to planning, execution, operations, partnering and financing.

The Enterprise Risk Manager and the executive-level Risk Committee collaborate to identify, assess and mitigate the major risks facing the company. They also work together on a roadmap for continually enhancing the ERM process. In addition, the Enterprise Risk Manager has specific oversight of our insurance program (insurable risks) and credit portfolio (counterparty risks).

In the process of developing and prioritizing a Risk Register, the manager and the committee work closely with executive-level and next-level managers to identify and assess the drivers of uncertainty that affect the company's operations and results. One outcome of this process is a clear matching of risk drivers to risk owners. In turn, the manager, the committee and the risk owners collaboratively develop plans for mitigating and responding to specific risks.

The Enterprise Risk Manager and the Risk Committee report regularly on their activities to the Audit Committee of the Board of Directors and, annually, to the full Board of Directors. In return, the manager and committee receive direction on processes and priorities from the Audit Committee and the Board.



## Cybersecurity

The core pillars of Murphy's Information Technology (IT) vision and mission are digital excellence, innovation and cybersecurity. They set the tone for enabling business success. From accurately capturing field sensor data in well pads to dynamically analyzing terabytes of seismic data, technology is an integral part of our daily operations. As a result, it is critical that our IT applications and systems function properly and that data is secured, regardless of natural disasters or global events.

To combat rapidly evolving cyberthreats, we have implemented the following controls:

- **Adopted an "Adaptive Security" model** – This model focuses on preventive and detective controls and enables continuous monitoring and analytics, for complete protection across all layers of IT.
- **Implemented a comprehensive cybersecurity framework** – The Murphy Cybersecurity framework is aligned with NIST 800 series, ISO 27000 series, COBIT, OWASP and other leading industry standards and forms the baseline for integrating cyber hygiene across the Murphy IT environment.
- **Deployed enhanced security awareness and education** – All users are required to complete a cybersecurity training course annually. Additionally, Murphy IT employs an industry-leading security awareness and education platform to test our users on social engineering attacks, such as phishing, on an ongoing basis, and auto-enroll high-risk users in targeted awareness-training campaigns.
- **Strengthened endpoint security to protect remote workers** – Murphy IT implemented industry-leading Endpoint Detection and Response (EDR) and Mobile Device Management (MDM) technologies, to protect endpoints against sophisticated attacks such as Advanced Persistent Threats (APT), zero-days and ransomware.
- **Enhanced visibility of cybersecurity risk to the Board** – Cybersecurity risks are now routinely discussed in Board of Directors committee meetings. Internal Audit regularly audits the cybersecurity program and reports findings to the Audit Committee and solutions are implemented appropriately.
- **Forged strong partnerships with the Department of Homeland Security (DHS)** – The Murphy Cybersecurity team engages DHS Cybersecurity and Infrastructure Security Agency (CISA) regularly to perform security audits, vulnerability assessments, cyberthreat simulations and architecture reviews.

To enhance collaboration and productivity, and lay the foundation for the modern workplace, we have adopted leading cloud offerings such as Office 365 and the SAP cloud platform. Our goal was to ensure our users could securely access business-critical systems and data anywhere, any place and at any time. Additionally, to ensure these business-critical systems are available 24/7/365, we shifted to a proactive disaster-avoidance strategy by focusing on resilience rather than recovery. By building effective redundancy in our business-critical systems, we have significantly reduced the recovery time of these systems and mitigated negative business risks. We regularly review these solutions for areas of improvement and relevance.

We also actively monitor threat intelligence feeds and live events, like the recent Colonial Pipeline ransomware attack, to constantly enhance our understanding and action plan to minimize cyberthreats and better protect ourselves.

## Ethical Business Conduct

The Murphy [Code of Business Conduct and Ethics](#) provides clear direction to all employees and suppliers on the requirement that everyone working for and with Murphy behaves ethically and in accordance with our policies and standards.

The Code of Business Conduct and Ethics applies to all directors and employees of Murphy Oil Corporation and its subsidiaries, as well as all contractors who perform work for Murphy, work at Murphy's facilities or otherwise perform work on behalf of Murphy. Upon hire and throughout their time in their role, each individual is required to complete training on the Code of Business Conduct and Ethics, as well as specific training regarding topics including anti-bribery and corruption, ethics and anti-harassment.

Our executive team is trained on and expected to adhere to an [enhanced standard](#) of compliance with the rules that impose additional expectations regarding their conduct. This additional code is designed to protect and preserve stakeholders' interests.

We are committed to human rights and Indigenous rights and have published our policies on our website. Further discussion of human rights and Indigenous rights can be found in the Community Engagement section of this report (see page 56).



## Ethics Training and Reporting

We take violations of our policies seriously and inform employees that it is their duty to report suspected violations, since it can damage all employees and shareholders. Employees are encouraged to report infractions of the Code of Business Conduct and Ethics and can do so anonymously through a [third-party ethics hotline](#). Employees may contact the company's Corporate Compliance Officer or the Audit Committee directly for any matter regarding the code of conduct including those involving accounting, internal accounting or auditing matters. We assure employees that there will be no retaliation for reporting suspected problems in good faith, and those who retaliate will face disciplinary action.

A Compliance and Ethics website on the company's intranet emphasizes our commitment and facilitates access for our workforce to pertinent resources. The website includes a letter and video introduction from our CEO reiterating our commitment to our policies and values. It also includes readily accessible policies, FAQs, news and links to make reports or inquiries. Further, each month, the Corporate Compliance Officer issues a newsletter to keep employees up to speed on topics related to compliance and ethics.

Murphy's internal audit team conducts periodic reviews to ensure compliance with our Code. We regularly monitor the hotline and other reports of potential misconduct and address them consistently, promptly and thoroughly. We investigate violations of any of these standards and, when necessary, apply disciplinary or corrective action.

## Committed to Ethics

The Code of Business Conduct and Ethics is designed to emphasize the commitment necessary for those working for Murphy to act with integrity, including:

- Commitment to corporate citizenship requires compliance with applicable laws and regulations.
- Commitment to each other promotes Murphy as a safe place to work, including freedom from bullying, discrimination and harassment.
- Commitment to global business laws emphasizes that antitrust and other competition laws are adhered to and relationships with government officials throughout the world are properly managed.
- Commitment to shareholders ensures transparency in public disclosures and the protection of confidential information and intellectual property.
- Commitment that Murphy will not, and will not tolerate any attempt to, retaliate against anyone who makes a good faith report regarding a possible violation of the Code of Business Conduct and Ethics.

The Code of Business Conduct and Ethics also addresses the need to avoid conflicts of interest and prohibits competitive relationships, misuse of company assets and giving or receiving inappropriate gifts and favors. Because we take the issue so seriously, Murphy has a separate [Anti-Bribery and Corruption Policy](#).

## Public Advocacy

### Public Policy and Political Disclosures

International, federal, state and local policy initiatives can positively or negatively impact the success of our company. So, it is imperative that we actively engage in public policy where appropriate. We promote laws and regulations that allow the development of resources in a safe, efficient and environmentally responsible manner.

We comply with all applicable laws and regulations pertaining to our advocacy efforts with government officials. In the US, this includes the online [disclosure of federal lobbying activities](#) published through compliance with the Lobbying Disclosure Act and the [disclosure of federal political contributions](#) through compliance with the Federal Election Campaign Act.

In Canada, we [disclose payments to the government](#) in compliance with the Extractive Sector Transparency Measures Act (ESTMA). ESTMA reporting contributes to global efforts to increase transparency and deter corruption in the extractive sector by requiring extractive entities to publicly disclose, on an annual basis, specific payments made to all governments in Canada and abroad.

### Industry Associations

Murphy shares best practices, develops industry standards, and expands our public and political advocacy through membership in allied industry trade associations and related initiatives. Murphy reviews our trade association memberships on a regular basis to ensure alignment on industry and policy priorities, as well as to ensure the organizations' effectiveness and value for our company and shareholders.

Murphy is currently a member of the following industry trade associations and initiatives: American Petroleum Institute, Canadian Association of Petroleum Producers, Center for Offshore Safety, Environmental Partnership, Greater Houston Partnership, HWCG, International Association of Drilling Contractors, IPIECA, Louisiana Mid-Continent Oil and Gas Association, National Ocean Industries Association, Offshore Operators Committee, National Petroleum Council, Texas Oil & Gas Association, and US Oil & Gas Association.

Our positions on key ESG issues do not always align completely with the industry associations and other groups of which we are members. Therefore, our membership does not necessarily indicate our support for all the organizations' positions.

Our suppliers are critical to the success and delivery of our operational goals. In 2020, we procured approximately \$1.4 billion in commercial goods and services from almost 2,200 suppliers. We seek to work with suppliers that share Murphy's core values of safety, social responsibility and continuous improvement as outlined in our Code of Business Conduct and Ethics.

We conduct all contracting and procurement activities in an ethical manner, in accordance with our Procurement Policy and applicable laws. The Procurement Policy functions on the premise that all supplier relationships operate on mutual interest and understanding, supported by a procurement process that is fair, impartial and honest. The policy defines guidelines for specific sourcing requirements, conduct for the evaluation of formal tenders, contracting practices for recurrent goods and services and required segregation of duties. We hold ourselves accountable for executing all purchasing activities in a manner that is highly ethical, while still driving value to the business through effective, market-driven sourcing strategies.

As part of our procurement process for operational vendors, a supplier qualification process is conducted in collaboration with various parts of the organization to ensure vendor suitability, based on an array of considerations. These considerations could include:

- Competitiveness
- Technical
- Compliance history/record
- Past performance
- Geographic location
- Safety record
- Financial stability
- Environmental record
- Business alignment
- Local content

As part of our standard contracts, suppliers must comply with all applicable laws and regulations, including in HSE, conflicts of interest, anti-corruption/Foreign Corrupt Practices Act, and must maintain any applicable licensing or permitting requirements for their services. These contracts are required for all operational suppliers before work is begun. In addition, Murphy actively contracts with local and Indigenous suppliers across various international regions where we operate, in accordance with local law.

### Supplier Diversity

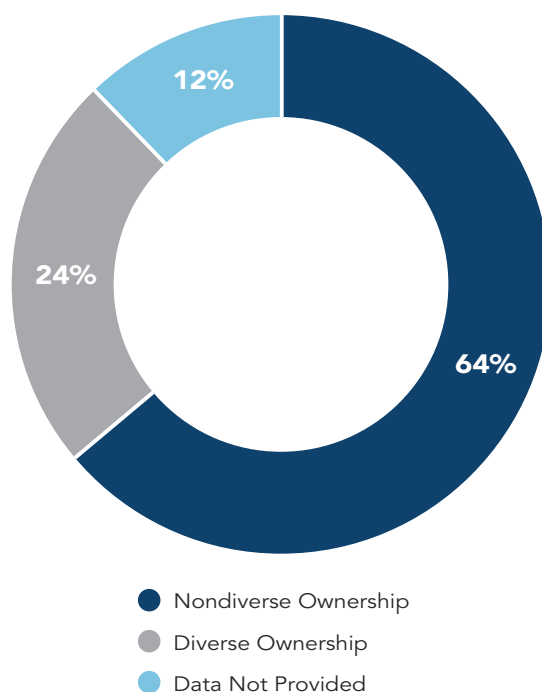
We are working to increase the diversity of our supplier base as part of our company's commitment to diversity, equity and inclusion. We know that a diverse supplier base allows us to benefit from the creativity and differing perspectives that each vendor brings to our operations.

Based on questionnaires completed by approximately 800 of our qualified North American vendors in 2020, 24% of our suppliers reported having some level of diverse ownership within their organization (qualified as being minority-, women-, veteran-, LGBTQ-owned or designated as a small business owner by the US Small Business Administration).

Murphy constantly assesses improvement opportunities and works with our vendor base to collaboratively advance sustainability goals. In this spirit, we are continuing to develop and expand our sustainability practices and reporting, evaluating items such as:

- Tracking formal acknowledgment of our Code of Business Conduct and Ethics by qualified vendors
- Enhanced reporting around sustainability policies enacted within our suppliers' own companies
- Additional questions in bid evaluations around sustainability topics and operational capabilities

**Diversity of Qualified Supplier Base**



# Performance Data and Assurance

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# Performance Data

	Units	2020	2019	2018	2017	2016
<b>Greenhouse Gas (GHG) Emissions<sup>1</sup></b>						
Operated Scope 1 Emissions	metric ton CO <sub>2</sub> e	1,166,910	1,219,971	2,174,224	2,086,207	2,193,543 <sup>2</sup>
Operated Scope 1 Emissions From Flared Hydrocarbons	metric ton CO <sub>2</sub> e	481,794	484,701	1,108,320	1,067,788	
Operated Scope 1 Emissions From Other Vented Emissions	metric ton CO <sub>2</sub> e	130,435	125,188	112,065	99,719	
Operated Scope 1 Emissions From Combustion	metric ton CO <sub>2</sub> e	523,710	576,871	807,735	782,996	
Operated Scope 1 Emissions From Process Emissions	metric ton CO <sub>2</sub> e	6,980	7,965	7,617	7,893	
Operated Scope 1 Emissions From Fugitive Emissions/Leaks	metric ton CO <sub>2</sub> e	23,991	25,247	138,487	127,812	
Operated Scope 1 Emissions by Source						
Flaring/Venting	%	52.5%	50.0%	56.1%	56.0%	
Fuel Combustion	%	44.9%	47.3%	37.2%	37.5%	
Other	%	2.7%	2.7%	6.7%	6.5%	
Operated Scope 1 Emissions From Methane	%	18.2%	16.2%	16.2%	15.4%	
Operated Scope 1 Emissions Covered Under a Regulatory Program	%	6.3%	6.0%			
Operated Scope 2 Emissions <sup>3</sup>	metric ton CO <sub>2</sub> e	33,974	30,349	51,499	54,346	59,798 <sup>2</sup>
Global Net Equity Scope 3 Emissions (Category 11: Use of Sold Products only)	metric ton CO <sub>2</sub> e	20,610,000				

<sup>1</sup> 2019 emissions data has been restated to exclude Malaysia.

<sup>2</sup> 2016 Scope 1 data updated to include indirect drilling and completions emissions, which were previously categorized as indirect emissions. Gross Operated Production data also updated.

<sup>3</sup> Electrical usage emissions factor for US: Ecometrica (2011); Canada: National Inventory Report to UN IPCC (1990-2011).

<b>Emissions Intensities<sup>4</sup></b>						
GHG Emissions Intensity (Total Scope 1 + Scope 2 Emissions) ÷ Gross Operated Production	metric ton CO <sub>2</sub> e/MMBOE	14,662	16,234	25,912	25,124	25,777 <sup>5</sup>
Total Scope 1 + Scope 2 Emissions	metric ton CO <sub>2</sub> e	1,200,884	1,250,320	2,225,724	2,140,553	2,253,341 <sup>5</sup>
Methane Intensity Methane Released ÷ Methane Produced	%	0.32%	0.27%	0.32%	0.32%	
Flaring Intensity Flaring Volume ÷ (Gross Operated Production x 10 <sup>6</sup> )	Mcf/BOE	0.05				
Flaring Volume (Routine and Non-Routine)	Mcf	3,724,796				
Flaring Performance Amount of Gross Global Scope 1 Emissions from Flared Hydrocarbons ÷ Gross Operated Production	metric ton CO <sub>2</sub> e/MMBOE	5,882	6,293	12,904	12,533	

<sup>4</sup> 2019 emissions data has been restated to exclude Malaysia.

<sup>5</sup> 2016 Scope 1 data updated to include indirect drilling and completions emissions, which were previously categorized as indirect emissions. Gross Operated Production data also updated.



	Units	2020	2019	2018	2017	2016
<b>Emissions Intensities (cont.)<sup>4</sup></b>						
% of Produced Gas Flared	%	2.0%				
<i>Flaring Volume ÷ Gross Operated Natural Gas Produced</i>						
Gross Operated Natural Gas Produced	Mcf	183,717,288				
Gross Operated Production	MMBOE	81.91	77.02	85.89	85.20	87.42 <sup>5</sup>

4 2019 emissions data has been restated to exclude Malaysia.

5 2016 Scope 1 data updated to include indirect drilling and completions emissions, which were previously categorized as indirect emissions. Gross Operated Production data also updated.

<b>Air Quality</b>						
Nitrogen Oxide (NO <sub>x</sub> ) Emissions	metric tons	2,848	3,196	2,667	2,215	
Sulfur Oxide (SO <sub>2</sub> ) Emissions	metric tons	553	798	547	576	
Volatile Organic Compounds (VOCs) Emissions	metric tons	2,236	2,368	2,638	1,536	
Particulate Matter (PM <sub>10</sub> ) Emissions	metric tons	265	307	236	233	

<b>Onshore Operations Water Management<sup>6</sup></b>						
Total Fresh Water Withdrawn	thousand cubic meters	2,396	5,268	4,923	4,554	
Groundwater	thousand cubic meters	770	3,768	2,189	2,880	
Municipal	thousand cubic meters	0	0	0	42	
Surface Water	thousand cubic meters	1,626	1,500	2,733	1,632	
Total Fresh Water Consumed	thousand cubic meters	1,810	5,151	4,360	4,662	
Groundwater	thousand cubic meters	770	3,601	2,292	2,880	
Municipal	thousand cubic meters	0	0	0	42	
Surface Water	thousand cubic meters	1,040	1,550	2,067	1,739	
Total Fresh Water Withdrawn in Regions with High or Extremely High Baseline Water Stress	%	0%	0%	0%	0%	
Total Fresh Water Consumed Intensity	thousand cubic meters per well completion	46	49	51	48	
<i>Freshwater Consumed ÷ Number of Wells Completed in that Year</i>						
Number of Wells Completed in that Year	#	39	105	86	97	

6 Changes to water metrics reflect year-over-year continuous improvement in processes and data capture. In addition, this year, we are reporting our onshore and offshore operations water management metrics distinctly, for transparency and clarity.

	Units	2020	2019	2018	2017	2016
<b>Onshore Operations Water Management (cont.)<sup>6</sup></b>						
Total Water Consumed for Murphy Operations (Freshwater and Recycled Water)	thousand cubic meters	1,895	5,412	4,534	4,721	
Produced Water Recycled for Murphy Operations	thousand cubic meters	85	261	174	59	
Produced Water Recycled for Murphy Operations and Other Operators	thousand cubic meters	85	280	196	59	
Total Recycled Water (Consumed by Murphy and Other Operators) of Total Water Consumed	%	4.5%	5.2%	4.3%	1.2%	
Volume of Produced Water and Flowback Generated	thousand cubic meters	932	1,887	1,784	2,172	
Produced Water and Flowback Discharged	%	0%	0%	0%	0%	
Produced Water and Flowback Injected <sup>7</sup>	%	84.9%	84.4%	90.3%	96.5%	
Produced Water and Flowback Recycled (Including Water Shared with Other Operators) <sup>7</sup>	%	9.1%	14.9%	11.0%	2.7%	
Hydrocarbon Content in Discharged Water	metric tons	0	0	0	0	
Hydraulically Fractured Wells for Which There Is Public Disclosure of All Fracturing Fluid Chemicals Used	%	100%	100%	100%	100%	
Hydraulic Fracturing Sites Where Ground or Surface Water Quality Deteriorated Compared to a Baseline	%	0%	0%	0%	0%	

<sup>6</sup> Changes to water metrics reflect year-over-year continuous improvement in processes and data capture. In addition, this year, we are reporting our onshore and offshore operations water management metrics distinctly, for transparency and clarity.

<sup>7</sup> Data does not add to 100% exactly due to: calendar year of water generation versus use, evaporation and pond bottom levels.

<b>Offshore Operations Water Management<sup>8</sup></b>						
Produced Water Discharged to Sea	thousand cubic meters	841	650			
Hydrocarbon Concentration <sup>9</sup>	mg/L	13.16	13.93			
Hydrocarbon Content in Produced Water Discharged to Sea	metric tons	11.07	9.05			

<sup>8</sup> This year, we are reporting our onshore and offshore operations water management metrics distinctly, for transparency and clarity.

<sup>9</sup> US EPA regulatory limit is 29 mg/L.

<b>Waste Management</b>						
Total Waste Generated (Solid and Semi-Solid)	metric tons	94,588				
Non-Hazardous Wastes	metric tons	94,552				
Hazardous Wastes	metric tons	36				

	Units	2020	2019	2018	2017	2016
<b>Spills<sup>10</sup>, Biodiversity Impact, Critical Incident Risk Management and Other Metrics</b>						
Hydrocarbon Spills (Same as Number of Hydrocarbon Spills)	#	4	1	5	4	8
Hydrocarbon Spills (Same as Aggregate Volume of Hydrocarbon Spills)	barrels	81	83	380	1,475	668
Volume of Hydrocarbon Spills in Arctic	barrels	0	0	0	0	0
Volume of Hydrocarbon Spills Near Shorelines With ESI Rankings 8-10	barrels	0	0			
Volume Recovered	barrels	54	0			
Proved Reserves in or Near Sites With Protected Conservation Status or Endangered Species Habitat	%	1%	1%			
Probable Reserves in or Near Sites With Protected Conservation Status or Endangered Species Habitat	%	N/A	N/A			
Process Safety Event (PSE) Events for Loss of Primary Containment (LOPC) of Greater Consequence (Tier 1)	#	3	5	9		
Process Safety Event (PSE) Rates for Loss of Primary Containment (LOPC) of Greater Consequence (Tier 1)	per 200,000 work hours	0.12	0.10	0.15		
Environmental Fines and Penalties (Operated)	\$ Thousand	0				

10 Spill event ≥ 1 BBL and outside of containment.

<b>Safety</b>						
Fatality Rate, Employees + Contractors	per 200,000 work hours	0	0	0	0	0
Fatality Rate, Employees	per 200,000 work hours	0	0	0	0	0
Fatality Rate, Contractors	per 200,000 work hours	0	0	0	0	0
Total Recordable Incident Rate (TRIR), Employees + Contractors	per 200,000 work hours	0.28	0.52	0.40	0.40	0.19
Total Recordable Incident Rate (TRIR), Employees	per 200,000 work hours	0.12	0.35	0.21	0.07	0
Total Recordable Incident Rate (TRIR), Contractors	per 200,000 work hours	0.36	0.57	0.45	0.50	0.26
Near Miss Frequency Rate, Employees + Contractors	per 200,000 work hours	2.14	1.40	1.43	1.13	
Near Miss Frequency Rate, Employees	per 200,000 work hours	2.34	1.50	1.86	1.27	
Near Miss Frequency Rate, Contractors	per 200,000 work hours	2.05	1.37	1.29	1.09	

	Units	2020	2019	2018	2017	2016
<b>Safety (cont.)</b>						
Lost Time Incident Rate (LTIR), Employees + Contractors	per 200,000 work hours	0.08	0.08	0.15	0.12	0.06
Lost Time Incident Rate (LTIR), Employees	per 200,000 work hours	0.12	0.09	0.14	0	0
Lost Time Incident Rate (LTIR), Contractors	per 200,000 work hours	0.06	0.08	0.16	0.16	0.08
Average Hours of Health, Safety and Emergency Response Training, Employees (Based on Total Employee Head Count as of Year-End 2020)	per total number employees	15	14			
Average Hours of Health, Safety and Emergency Response Training, Contractors (US-Based Only)	per total number contractors	13	18			
Preventable Vehicle Incident Rate (Employee and US Onshore Only)	per million miles driven	1.24	1.43	1.78		

## Employee Diversity, Equity and Inclusion<sup>11</sup>

### Employee Workforce Metrics

Head Count (Total Company)	#	675 <sup>12</sup>	823	1,108	1,128	
Median Age	years	42	43 <sup>13</sup>	42	43	
Employee Turnover (Voluntary)	%	6%	10%	8%	7%	

### Representation of Women (US and International)

Executive and Senior Level Managers	%	12%	14%	16% <sup>14</sup>	17%	
First- and Mid-Level Managers	%	17%	22%	20% <sup>14</sup>	20%	
Professionals	%	34%	34%	36% <sup>14</sup>	41%	
Other (Administrative Support and Field)	%	7%	20%	20%	26%	
Total	%	21%	27%	28% <sup>13</sup>	32%	

### Representation of Minorities (US-Based Only)

Executive and Senior Level Managers	%	12%	9% <sup>13</sup>	8% <sup>14</sup>	5%	
First- and Mid-Level Managers	%	23%	24%	24%	20%	
Professionals	%	33%	29%	25%	28%	
Other (Administrative Support and Field)	%	31%	36%	32%	30%	
Total	%	30%	29%	27%	26%	

<sup>11</sup> 2017 and 2018 data includes employees in Malaysia.

<sup>12</sup> The head count reduction in 2020 is primarily driven by El Dorado, Arkansas and Calgary, Canada office closures.

<sup>13</sup> Previously reported number updated.

<sup>14</sup> 2018 numbers have been adjusted as the previous calculation included fixed-term employees.



	Units	2020	2019	2018	2017	2016
<b>Security, Human Rights, Rights of Indigenous People and Community Relations</b>						
Proved Reserves in or Near Areas of Conflict	%	0%	0%			
Probable Reserves in or Near Areas of Conflict	%	N/A	N/A			
Proved Reserves in or Near Indigenous Land	%	0%	0%			
Probable Reserves in or Near Indigenous Land	%	N/A	N/A			
Number of Nontechnical Delays	#	0	0			
Duration of Nontechnical Delays	days	0	0			

<b>Reserves Valuation and Capital Expenditures</b>						
Amount Invested in Renewable Energy	\$	7,200	53,000			
Revenue Generated by Renewable Energy Sales	\$	0	0			

<b>Business Ethics and Transparency</b>						
Proved Reserves in Countries That Have the 20 Lowest Rankings in Transparency International's Corruption Perception Index	%	0%	0%			
Probable Reserves in Countries That Have the 20 Lowest Rankings in Transparency International's Corruption Perception Index	%	N/A	N/A			

# Equal Employment Opportunity (EEO-1) Diversity Data: Year-End 2020

Job Categories	Gender	American Indian/ Alaskan Native	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Other Pacific Island	Two or More Races	White	Grand Total
Executive and Senior-Level Managers	Male	–	–	–	5.9%	–	–	82.4%	2.7%
	Female	–	–	–	5.9%	–	–	5.9%	
First- and Mid-Level Managers	Male	1.6%	8.6%	1.6%	5.5%	–	–	67.2%	20.6%
	Female	–	3.1%	0.8%	1.6%	–	–	10.2%	
Professionals	Male	0.7%	7.3%	2.2%	8.1%	0.4%	0.4%	46.5%	44.0%
	Female	–	4.8%	2.2%	7.0%	–	0.4%	20.1%	
Other (Administrative Support and Field)	Male	0.5%	–	4.0%	22.8%	0.5%	1.0%	64.9%	32.6%
	Female	–	–	0.5%	1.5%	–	–	4.5%	
Total	Male	0.8%	5.0%	2.6%	12.3%	0.3%	0.5%	57.7%	79.2%
	Female	–	2.7%	1.3%	4.0%	–	0.2%	12.6%	20.8%

Note: The data in the table above is based on mandatory annual EEO-1 disclosure reported to the US Department of Labor.

# Independent Assurance Statement to Murphy Oil Corporation

ERM Certification and Verification Services (ERM CVS) was engaged by Murphy Oil Corporation ('Murphy Oil') to provide assurance in relation to the information set out below and presented in Murphy Oil's 2021 Sustainability Report ('the Report').

Engagement summary	
Scope of our assurance engagement	<p>Whether the corporate 2020 (absolute) data for the following selected indicators are fairly presented, in all material respects, in accordance with the reporting criteria:</p> <ul style="list-style-type: none"> <li>Total Scope 1 GHG emissions [metric tonnes CO<sub>2</sub>e]</li> <li>Total Scope 2 GHG emissions [metric tonnes CO<sub>2</sub>e]</li> <li>Total Scope 1 and 2 GHG emissions [metric tonnes CO<sub>2</sub>e]</li> </ul>
Reporting criteria	<p>WRI/WBCSD's GHG Protocol US EPA Mandatory GHG Reporting Rule Murphy Oil's internal reporting criteria and definitions (where relevant)</p>
Assurance standard	ERM CVS' assurance methodology, based on the International Standard on Assurance Engagements ISAE 3000 (Revised).
Assurance level	Limited assurance.
Respective responsibilities	<p>Murphy Oil is responsible for preparing the Report and for the collection and presentation of the information within it.</p> <p>ERM CVS' responsibility is to provide conclusions on the agreed scope based on the assurance activities performed and exercising our professional judgement.</p>

## Our conclusions

Based on our activities, as described below, nothing has come to our attention to indicate that the corporate 2020 data for the selected GHG emissions in Murphy Oil's 2021 Sustainability Report are not fairly presented, in all material respects, with the reporting criteria.

## Our assurance activities

A multi-disciplinary team of sustainability and assurance specialists performed a range of assurance procedures which varied across the disclosures covered by our assurance engagement, as follows:

- Telephone interviews with relevant staff at Murphy Oil's Headquarters to understand and evaluate the data management systems and processes (including systems and internal review processes) used for collecting and reporting the selected data.
- Virtual field visits to Karnes, USA; Delta House, USA; and Kaybob, CA to review local reporting processes and consistency of reported annual data with selected underlying source data for each indicator. We interviewed relevant staff, reviewed site data capture and reporting methods, checked calculations and assessed the local internal quality and assurance processes.
- An analytical review of the data from all sites and a check on the completeness and accuracy of the corporate data consolidation.
- A review at corporate level of a sample of qualitative and quantitative evidence supporting the reported information.
- Confirmation of conversion factors and assumptions used.
- Review of the presentation of information relevant to the scope of our work in the Report to ensure consistency with our findings.

*ERM CVS is a member of the ERM Group. The work that ERM CVS conducts for clients is solely related to independent assurance activities and auditor training. Our processes are designed and implemented to ensure that the work we undertake with clients is free from bias and conflict of interest. ERM CVS and the staff that have undertaken work on this assurance exercise provide no consultancy related services to Murphy Oil in any respect.*

## The limitations of our engagement

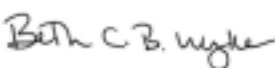

Due to travel restrictions relating to COVID-19, our assurance activities consisted of desktop reviews of data and related information, and virtual meetings and interviews with Murphy Oil personnel.

The reliability of the assured information is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. It is important to understand our assurance conclusions in this context.

## Our Observations

We provide Murphy Oil with a separate management report with our detailed (non-material) findings and recommendations. Without affecting the conclusions presented above, we have the following key observation:

- Murphy Oil should consider using updated electricity emission factors for future reporting.

Beth Wyke  
Head of Corporate Assurance Services

27 July 2021

ERM Certification and Verification Services, London  
[www.ermcvs.com](http://www.ermcvs.com) Email: [post@ermcvs.com](mailto:post@ermcvs.com)

# Content Indices

## Sustainability Accountability Standards Board (SASB)

Code	Metric	Location
<b>Greenhouse Gas Emissions</b>		
EM-EP-110a.1	Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations	Performance Data, page 66
EM-EP-110a.2	Amount of gross global Scope 1 emissions from: (1) flared hydrocarbons, (2) other combustion, (3) process emissions, (4) other vented emissions and (5) fugitive emissions	Performance Data, page 67
EM-EP-110a.3	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Improving Emissions Performance, page 18
<b>Air Quality</b>		
EM-EP-112a.1	Air emissions of the following pollutants: (1) NO <sub>x</sub> (excluding N <sub>2</sub> O), (2) SO <sub>x</sub> , (3) volatile organic compounds (VOCs), and (4) particulate matter (PM <sub>10</sub> )	Performance Data, page 67; Improving Emissions Performance: Combustion, page 19
<b>Water Management</b>		
EM-EP-140a.1	(1) Total fresh water withdrawn, (2) total fresh water consumed, percentage of each in regions with high or extremely high baseline water stress	Performance Data, pages 67-68; Water Management, pages 26-30
EM-EP-140a.2	Volume of produced water and flowback generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content in discharged water	Performance Data, pages 67-68
EM-EP-140a.3	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used	Performance Data, pages 67-68
EM-EP-140a.4	Percentage of hydraulic fracturing sites where ground or surface water quality deteriorated compared to a baseline	Performance Data, pages 67-68
<b>Biodiversity Impacts</b>		
EM-EP-160a.1	Description of environmental management policies and practices for active sites	Biodiversity Protection, pages 31-32
EM-EP-160a.2	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume impacting shorelines with ESI rankings 8-10, and volume recovered	Performance Data, page 69
EM-EP-160a.3	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat	Performance Data, page 69



Code	Metric	Location
<b>Human Rights and Community Relations</b>		
EM-EP-210a.1	Percentage of (1) proved and (2) probable reserves in or near areas of conflict	Performance Data, page 71
EM-EP-210a.2	Percentage of (1) proved and (2) probable reserves in or near Indigenous land	Performance Data, page 71
EM-EP-210a.3	Discussion of engagement processes and due diligence practices with respect to human rights, Indigenous rights, and operation in areas of conflict	Community Engagement, pages 55-56; <a href="#">Human Rights and Indigenous Rights Policies</a> on website
EM-EP-210b.1	Discussion of process to manage risks and opportunities associated with community rights and interests	Community Engagement, pages 55-56
EM-EP-210b.2	Number and duration of nontechnical delays	Performance Data, page 71

<b>Workforce Health and Safety</b>		
EM-EP-320a.1	(1) Total recordable incident rate (TRIR), (2) fatality rate, (3) near-miss frequency rate (NMFR), and (4) average hours of health, safety and emergency response training for (a) full-time employees, (b) contract employees and (c) short-service employees	Performance Data, pages 69-70
EM-EP-320a.2	Discussion of management systems used to integrate a culture of safety throughout the exploration and production lifecycle	Protecting Our People, pages 41-48

<b>Reserves Valuation and Capital Expenditures</b>		
EM-EP-420a.1	Sensitivity of hydrocarbon reserve levels to future price projection scenarios that account for a price on carbon emissions	Assessing Transition Pathways, page 24
EM-EP-420a.2	Estimated carbon dioxide emissions embedded in proved hydrocarbon reserves	
EM-EP-420a.3	Amount invested in renewable energy, revenue generated by renewable energy sales	Performance Data, page 71
EM-EP-420a.4	Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition and development of assets	Climate Strategy, pages 22-24

<b>Business Ethics and Transparency</b>		
EM-EP-510a.1	Percentage of (1) proved and (2) probable reserves in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Performance Data, page 71
EM-EP-510a.2	Description of the management system for prevention of corruption and bribery throughout the value chain	Ethical Business Conduct, pages 62-63

<b>Management of the Legal and Regulatory Environment</b>		
EM-EP-530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Climate Risk Management, pages 24-25; Investing in Our Communities, pages 56-57

Code	Metric	Location
<b>Critical Incident Risk Management</b>		
EM-EP-540a.1	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1)	Performance Data, page 69
EM-EP-540a.2	Description of management systems used to identify and mitigate catastrophic and tail-end risks	Process Safety and Asset Integrity, pages 34-35; Well Integrity, pages 35-36; Chemical Stewardship, page 37; Seismicity, page 38; Protecting Our People, pages 41-48; Emergency Response and Preparedness, page 48

<b>Activity Metric</b>		
EM-EP-000.A	Production of: (1) oil, (2) natural gas, (3) synthetic oil and (4) synthetic gas	<a href="#">2020 Form 10-K</a>
EM-EP-000.B	Number of offshore sites	<a href="#">2020 Form 10-K</a>
EM-EP-000.C	Number of terrestrial sites	<a href="#">2020 Form 10-K</a>

## Task Force on Climate-related Financial Disclosures (TCFD)

Element	Disclosure	Location
<b>Governance</b>	Board's oversight of climate-related risks and opportunities	Climate Governance, page 21
	Management's role in assessing and managing climate-related risks and opportunities	Climate Governance, page 21
<b>Strategy</b>	Climate-related risks and opportunities the organization has identified over the short, medium and long term	Climate Strategy, pages 22-24
	Impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning	Climate Strategy, pages 22-24
	Resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	Climate Strategy, pages 22-24
<b>Risk Management</b>	Organization's processes for identifying and assessing climate-related risks	Focusing on What Matters Most page 11; Climate Risk Management, pages 24-25; Enterprise Risk Management page 61
	Organization's processes for managing climate-related risks	Climate Risk Management, pages 24-25
	Processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.	Focusing on What Matters Most page 11; Climate Risk Management, pages 24-25; Enterprise Risk Management page 61
<b>Metrics and Targets</b>	Metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	Climate Metrics and Targets, page 25
	Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	Climate Change and Emissions, pages 16-21; Performance Data, page 66
	Targets used by the organization to manage climate-related risks and opportunities and performance against targets	Climate Metrics and Targets, page 25

# IPIECA/API/IOGP Sustainability Reporting Guidance, 4th Edition, 2020

Indicator	Disclosure	Location
<b>Governance and Business Ethics</b>		
GOV-1	Governance approach	About This Report, page 2; Who We Are, pages 8-9; Our Approach to ESG, pages 10-14; Governance and Responsible Business Practices, pages 59-64; <a href="#">Corporate Governance</a> on website
GOV-2	Management systems	About This Report, page 2; Who We Are, pages 8-9; Our Approach to ESG, pages 10-14; Governance and Responsible Business Practices, pages 59-64; <a href="#">Corporate Governance</a> on website
GOV-3	Preventing corruption	Ethical Business Conduct, pages 62-63; Supply Chain Management, page 64; <a href="#">Corporate Governance</a> on website
GOV-4	Transparency of payments to host governments	Public Advocacy, page 63
GOV-5	Public advocacy and lobbying	Public Advocacy, page 63
<b>Climate Change and Energy</b>		
CCE-1	Climate governance and strategy	Board and Managerial Oversight of Sustainability, pages 13-14; Climate Governance, page 21; Climate Strategy, pages 22-24; <a href="#">Climate Change Position</a> on website
CCE-2	Climate risk and opportunities	Climate Change and Emissions, pages 16-21; Climate Risk Management, pages 24-25; Climate Metrics and Targets, page 25; Enterprise Risk Management, page 61
CCE-3	Lower-carbon technology	Climate Change and Emissions, pages 16-21
CCE-4	Greenhouse gas (GHG) emissions	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
CCE-5	Methane emissions	Improving Our Emissions: Methane, page 19; Performance Data, pages 66-67
CCE-6	Energy use	Climate Change and Emissions, pages 16-21; Performance Data, page 71
CCE-7	Flared gas	Improving Our Emissions: Flaring, page 20; Performance Data, pages 66-67
<b>Environment</b>		
ENV-1	Freshwater	Water Management, pages 26-30; Performance Data, pages 67-68
ENV-2	Discharges to water	Water Management, pages 26-30; Performance Data, pages 67-68
ENV-3	Biodiversity policy and strategy	Biodiversity Protection, page 31
ENV-4	Protected and priority areas for biodiversity conservation	Biodiversity Protection, page 31
ENV-5	Emissions to air	Improve Emissions Performance: Combustion, page 19; Performance Data, page 67
ENV-6	Spills to the environment	Spills Management, page 33; Process Safety and Asset Integrity, pages 34-35; Well Integrity, pages 35-36; Emergency Response and Preparedness, page 48; Performance Data, page 69
ENV-7	Materials management	Water Management, pages 26-30; Chemical Stewardship, page 37; Waste Management, pages 38-39; Performance Data, pages 67-68
ENV-8	Decommissioning	Well Abandonment, page 36



Indicator	Disclosure	Location
<b>Safety, Health and Security</b>		
SHS-1	Safety, health and security engagement	Protecting Our People, pages 41-48
SHS-2	Workforce health	COVID-19 Response, pages 6-7; Health and Safety Management System, page 43; Benefits and Wellness, page 51
SHS-3	Occupational injury and illness incidents	Protecting Our People, pages 41-48; Performance Data, page 69
SHS-4	Transport safety	Building a Culture of Safety, page 45; Safety Performance Monitoring and Measurement, page 46; Performance Data, page 69
SHS-5	Product stewardship	Chemical Stewardship, page 37; Waste Management, pages 38-39
SHS-6	Process safety	Process Safety and Asset Integrity, pages 34-35; Performance Data, page 69
SHS-7	Security risk management	Physical Security, page 48; Emergency Response and Preparedness, page 48; Enterprise Risk Management page 61; Cybersecurity, page 62
<b>Social</b>		
SOC-1	Human rights due diligence	Human Rights, page 56; Ethical Business Conduct, pages 62-63
SOC-2	Suppliers and human rights	Human Rights, page 56; Ethical Business Conduct, pages 62-63; Supply Chain Management, page 64
SOC-3	Security and human rights	Human Rights, page 56
SOC-4	Site-based labour practices and worker accommodation	Health and Safety Management System, page 43; Human Rights, page 56; Ethical Business Conduct, pages 62-63; Supply Chain Management, page 64
SOC-5	Workforce diversity and inclusion	Diversity, Equity and Inclusion, pages 50-51; Performance Data, page 70; EEO-1 Data, page 72
SOC-6	Workforce engagement	Employee Engagement, page 53; Performance Data, page 70
SOC-7	Workforce training and development	Training and Development, page 52
SOC-8	Workforce nonretaliation and grievance mechanisms	Ethical Business Conduct, pages 62-63; <a href="#">Corporate Governance: Reporting of Concerns</a> on website
SOC-9	Local community impacts and engagement	Community Engagement, pages 54-58
SOC-10	Indigenous peoples	Protecting Indigenous Rights, page 56
SOC-11	Land acquisition and involuntary resettlement	Not applicable
SOC-12	Community grievance mechanisms	Working with Communities, page 55; Human Rights, page 56; <a href="#">Corporate Governance: Reporting of Concerns</a> on website
SOC-13	Social investment	Investing in Our Communities, pages 56-58
SOC-14	Local procurement and supplier development	Working with Communities, page 55; Supply Chain Management, page 64
SOC-15	Local hiring practices	Local Hiring, page 51; Working with Communities, page 55

## Global Reporting Initiative (GRI)

Indicator	Disclosure	Location
<b>GRI 102: General Disclosures</b>		
<b>Organizational Profile</b>		
102-1	Name of the organization	Murphy Oil Corporation
102-2	Activities, brands, products, and services	Murphy Oil Corporation is a global oil and natural gas exploration and production company, with both onshore and offshore operations and properties.
102-3	Location of headquarters	9805 Katy Fwy, Suite G-200, Houston, Texas 77024
102-4	Location of operations	United States, Canada, Brunei, Australia, Vietnam, Mexico, Brazil
102-5	Ownership and legal form	The company is a Delaware corporation, and its common stock is listed and traded on the NYSE under the ticker symbol "MUR".
102-6	Markets served	<a href="#">2020 SEC Form 10-K</a>
102-7	Scale of the organization	<a href="#">2020 SEC Form 10-K</a>
102-8	Information on employees and other workers	Diversity, Equity and Inclusion, pages 50-51; Performance Data, page 70; EEO-1 Data, page 72
102-9	Supply chain	Supply Chain Management, page 64; <a href="#">2020 SEC Form 10-K</a>
102-10	Significant changes to the organization and its supply chain	None
<b>Strategy</b>		
102-14	Statement from senior decision-maker	Message to Our Stakeholders, pages 4-5
102-15	Key impacts, risks, and opportunities	2021 Sustainability Report, multiple sections; <a href="#">2020 SEC Form 10-K</a>
<b>Ethics and Integrity</b>		
102-16	Values, principles, standards, and norms of behavior	Our Purpose, Mission, Vision, Values and Behaviors, page 9; Human Rights, page 56; Ethical Business Conduct, pages 62-63
102-17	Mechanisms for advice and concerns about ethics	Ethical Business Conduct, pages 62-63; <a href="#">Corporate Governance: Reporting of Concerns</a> on website
<b>Governance</b>		
102-18	Governance structure	Board and Managerial Oversight of Sustainability, pages 13-14; <a href="#">2021 Proxy Statement</a>
102-19	Delegating authority	Board and Managerial Oversight of Sustainability, pages 13-14
102-20	Executive-level responsibility for economic, environmental, and social topics	Board and Managerial Oversight of Sustainability, pages 13-14
102-21	Consulting stakeholders on economic, environmental, and social topics	Engaging Our Stakeholders, page 12; <a href="#">2021 Proxy Statement</a>
102-22	Composition of the highest governance body and its committees	Governance Highlights, page 60; <a href="#">2021 Proxy Statement</a>
102-23	Chair of the highest governance body	Governance Highlights, page 60; <a href="#">2021 Proxy Statement</a>
102-24	Nominating and selecting the highest governance body	<a href="#">2021 Proxy Statement</a>

Indicator	Disclosure	Location
<b>GRI 102: General Disclosures (cont.)</b>		
102-25	Conflicts of interest	Ethical Business Conduct, pages 62-63; <a href="#">Corporate Governance: Reporting of Concerns</a> on website; <a href="#">2021 Proxy Statement</a>
102-28	Evaluating the highest governance body's performance	<a href="#">2021 Proxy Statement</a>
102-29	Identifying and managing economic, environmental, and social impacts	Board and Managerial Oversight of Sustainability, pages 13-14
102-30	Effectiveness of risk management processes	Board and Managerial Oversight of Sustainability, pages 13-14; Enterprise Risk Management, page 61
102-31	Review of economic, environmental, and social topics	Board and Managerial Oversight of Sustainability, pages 13-14
102-32	Highest governance body's role in sustainability reporting	Board and Managerial Oversight of Sustainability, pages 13-14
102-35	Remuneration policies	<a href="#">2021 Proxy Statement</a>
102-36	Process for determining remuneration	<a href="#">2021 Proxy Statement</a>
102-37	Stakeholders' involvement in remuneration	<a href="#">2021 Proxy Statement</a>
<b>Stakeholder Engagement</b>		
102-40	List of stakeholder groups	Engaging Our Stakeholders, page 12; <a href="#">2021 Proxy Statement</a>
102-42	Identifying and selecting stakeholders	Engaging Our Stakeholders, page 12; <a href="#">2021 Proxy Statement</a>
102-43	Approach to stakeholder engagement	Engaging Our Stakeholders, page 12; <a href="#">2021 Proxy Statement</a>
102-44	Key topics and concerns raised	Focusing on What Matters Most, page 11
<b>Reporting Practice</b>		
102-45	Entities included in the consolidated financial statements	<a href="#">2020 SEC Form 10-K</a>
102-46	Defining report content and topic boundaries	About This Report, page 2; Focusing on What Matters Most, page 11
102-47	List of material topics	Focusing on What Matters Most, page 11
102-48	Restatements of information	About This Report, page 2
102-49	Changes in reporting	None
102-50	Reporting period	About This Report, page 2; Unless otherwise stated, this report covers the period of Jan. 1 to Dec. 31, 2020.
102-51	Date of most recent report	Oct. 9, 2020
102-52	Reporting cycle	Annual
102-53	Contact point for questions regarding the report	<a href="mailto:sustainability@murphyoilcorp.com">sustainability@murphyoilcorp.com</a>
102-54	Claims of reporting in accordance with the GRI Standards	About This Report, page 2
102-55	GRI content index	This index
102-56	External assurance	Independent Assurance Statement, page 73

Indicator	Disclosure	Location
<b>GRI 201: Economic Performance</b>		
201-1	Direct economic value generated and distributed	<a href="#">2020 SEC Form 10-K</a>
201-2	Financial implications and other risks and opportunities due to climate change	<a href="#">2020 SEC Form 10-K</a>
201-3	Defined benefit plan obligations and other retirement plans	<a href="#">2020 SEC Form 10-K</a>
<b>GRI 205: Anti-corruption</b>		
205-2	Communication and training about anti-corruption policies and procedures	Ethical Business Conduct, pages 62-63; <a href="#">Corporate Governance</a> on website
<b>GRI 303: Water and Effluents</b>		
303-1	Interactions with water as a shared resource	Water Management, pages 26-30; Performance Data, pages 67-68
303-2	Management of water discharge-related impacts	Water Management, pages 26-30; Performance Data, pages 67-68
303-3	Water withdrawal	Water Management, pages 26-30; Performance Data, pages 67-68
303-4	Water discharge	Water Management, pages 26-30; Performance Data, pages 67-68
303-5	Water consumption	Water Management, pages 26-30; Performance Data, pages 67-68
<b>GRI 304: Biodiversity</b>		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected area	Biodiversity Protection, pages 31-32; Performance Data, page 69
304-2	Significant impacts of activities, products, and services on biodiversity	Biodiversity Protection, pages 31-32; Performance Data, page 69
304-3	Habitats protected or restored	Biodiversity Protection, pages 31-32; Performance Data, page 69
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Biodiversity Protection, pages 31-32; Performance Data, page 69
<b>GRI 305: Emissions</b>		
305-1	Direct (Scope 1) GHG emissions	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
305-2	Energy indirect (Scope 2) GHG emissions	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
305-3	Other indirect (Scope 3) GHG emissions	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
305-4	GHG emissions intensity	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
305-5	Reduction of GHG emissions	Climate Change and Emissions, pages 16-21; Performance Data, pages 66-67
305-7	Nitrogen oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), and other significant air emissions	Performance Data, page 67

Indicator	Disclosure	Location
<b>GRI 306: Waste</b>		
306-1	Waste generation and significant waste-related impacts	Waste Management, pages 38-39
306-2	Management of significant waste-related impacts	Waste Management, pages 38-39
306-3	Waste generated	Performance Data, page 68
<b>GRI 307: Environmental Compliance</b>		
307-1	Non-compliance with environmental laws and regulations	Performance Data, page 69
<b>GRI 401: Employment</b>		
401-1	New employee hires and employee turnover	Employee Engagement, page 53; Performance Data, page 70
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Benefits and Wellness, page 51
401-3	Parental leave	Benefits and Wellness, page 51; <a href="#">Careers: Benefits</a> on website
<b>GRI 403: Occupational Health and Safety</b>		
403-1	Occupational health and safety management system	Health and Safety Management System, page 43
403-2	Hazard identification, risk assessment, and incident investigation	Process Safety and Asset Integrity, pages 34-35; Building a Culture of Safety, page 45
403-3	Occupational health services	Contractor Management, page 47
403-4	Worker participation, consultation, and communication on occupational health and safety	Building a Culture of Safety, page 45; Contractor Management, page 47; Emergency Response and Preparedness, page 48
403-5	Worker training on occupational health and safety	Building a Culture of Safety, page 45; Contractor Management, page 47; Emergency Response and Preparedness, page 48
403-6	Promotion of worker health	COVID-19 Response, pages 6-7; Benefits and Wellness, page 51
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Process Safety and Asset Integrity, pages 34-35; Building a Culture of Safety, page 45; <a href="#">Protecting Our People: HSE Policy</a> on website
403-8	Workers covered by an occupational health and safety management system	Health and Safety Management System, page 43
403-9	Work-related injuries	Protecting Our People, pages 41-48; Performance Data, page 69



Indicator	Disclosure	Location
<b>GRI 404: Training and Education</b>		
404-1	Average hours of training per year per employee	Training and Development, page 52
404-2	Programs for upgrading employee skills and transition assistance programs	Training and Development, page 52
<b>GRI 405: Diversity and Equal Opportunity</b>		
405-1	Diversity of governance bodies and employees	Diversity, Equity and Inclusion, pages 50-51; Governance Highlights, page 60; Performance Data, page 70; EEO-1 Data, page 72; <a href="#">2021 Proxy Statement</a>
<b>GRI 412: Human Rights Assessment</b>		
412-2	Employee training on human rights policies or procedures	Human Rights, page 56; Ethical Business Conduct, pages 62-63
<b>GRI 413: Local Communities</b>		
413-1	Operations with local community engagement, impact assessments and development programs	Community Engagement, pages 54-58
<b>GRI 415: Public Policy</b>		
415-1	Political contributions	Public Advocacy, page 63

## United Nations Sustainable Development Goals

Goal		Location
Goal 1	End poverty in all its forms everywhere	Local Hiring, page 51; Community Engagement, pages 54-58
Goal 3	Ensure healthy lives and promote well-being for all at all ages	Climate Change and Emissions, pages 16-21; Protecting Our People, pages 41-48; Benefits and Wellness, page 51
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Training and Development, page 52; Community Engagement, pages 54-58
Goal 5	Achieve gender equality and empower all women and girls	Diversity, Equity and Inclusion, pages 50-51; Benefits and Wellness, page 51; Community Engagement, pages 54-58
Goal 6	Ensure availability and sustainable management of water and sanitation for all	Water Management, pages 26-30; Spills Management, page 33; Process Safety and Asset Integrity, pages 34-35; Emergency Response and Preparedness, page 48; Waste Management, page 38-39
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all	Climate Change and Emissions, pages 16-21; Climate Governance, page 21; Climate Strategy, pages 22-24; Climate Risk Management, pages 24-25; Climate Metrics and Targets, page 25; <a href="#">Climate Change Position</a> on website
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Local Hiring, page 51; Training and Development, page 52; Community Engagement, pages 54-58; Supply Chain Management, page 64
Goal 12	Responsible consumption and production—ensure sustainable consumption and production patterns	Climate Change and Emissions, pages 16-21; Climate Governance, page 21; Climate Strategy, pages 22-24; Climate Risk Management, pages 24-25; Climate Metrics and Targets, page 25; Water Management, pages 26-30; Chemical Stewardship, page 37; Waste Management, pages 38-39; Supply Chain Management, page 64
Goal 13	Take urgent action to combat climate change and its impacts	Climate Change and Emissions, pages 16-21; Climate Governance, page 21; Climate Strategy, pages 22-24; Climate Risk Management, pages 24-25; Climate Metrics and Targets, page 25; <a href="#">Climate Change Position</a> on website
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Spills Management, page 33; Process Safety and Asset Integrity, pages 34-35; Emergency Response and Preparedness, page 48; Waste Management, page 38-39
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Water Management, pages 26-30; Biodiversity Protection, pages 31-32; Spills Management, page 33; Process Safety and Asset Integrity, pages 34-35
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Ethical Business Conduct, pages 62-63; Public Advocacy, page 63; Supply Chain Management, page 64
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	2021 Sustainability Report, multiple sections on industry collaboration and partnerships

# Reader Advisory

## Your Feedback Is Welcome

For questions or feedback on our 2021 Sustainability Report, please contact us at [sustainability@murphyoilcorp.com](mailto:sustainability@murphyoilcorp.com).

## Additional Information

Visit [www.murphyoilcorp.com](http://www.murphyoilcorp.com) for additional information.

## Forward-Looking Statements and Risks

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are generally identified through the inclusion of words such as “aim”, “anticipate”, “believe”, “drive”, “estimate”, “expect”, “expressed confidence”, “forecast”, “future”, “goal”, “guidance”, “intend”, “may”, “objective”, “outlook”, “plan”, “position”, “potential”, “project”, “seek”, “should”, “strategy”, “target”, “will” or variations of such words and other similar expressions. These statements, which express management’s current views concerning future events or results, are subject to inherent risks and uncertainties. Our actual future results, including the achievement of any of our targets, goals or commitments described in this report, could differ materially from our projected results as the result of changes in circumstances, assumptions not being realized, or other risks, uncertainties and factors. Some of the factors that could cause one or more of these future events or results not to occur as implied by any forward-looking statement include, but are not limited to: macro conditions in the oil and gas industry, including supply/demand levels, actions taken by major oil exporters and the resulting impacts on commodity prices; increased volatility or deterioration in the success rate of our exploration programs or in our ability to maintain production rates and replace reserves; reduced customer demand for our products due to environmental, regulatory, technological or other reasons; adverse foreign exchange movements; political and regulatory instability in the markets where we do business; the impact on our operations or market of health pandemics such as COVID-19 and related government responses; other natural hazards impacting our operations or markets; any other deterioration in our business, markets or prospects; any failure to obtain necessary regulatory approvals; any inability to service or refinance our outstanding debt or to access debt markets at acceptable prices; or adverse developments in the U.S. or global capital markets, credit markets or economies in general. For further discussion of factors that could cause one or more of these future events or results not to occur as implied by any forward-looking statement, see “Risk Factors” in our most recent Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission (“SEC”) and any subsequent Quarterly Report on Form 10-Q or Current Report on Form 8-K that we file, available from the SEC’s website and from Murphy Oil Corporation’s website at <http://ir.murphyoilcorp.com>. Murphy Oil Corporation undertakes no duty to publicly update or revise any forward-looking statements.

In addition, the report include statistics or metrics that are estimates, makes assumptions based on developing standards that may change and provide aspirational goals that are not intended to be promises or guarantees. Due to the use of estimate and assumptions, the information in the report may not be correct and change at any time and we make no commitment to update that information as it develops.





## OUR PURPOSE

We believe in providing energy that empowers people.

## OUR MISSION

We challenge the norm, tap into our strong legacy and use our foresight and financial discipline to deliver inspired energy solutions.

## OUR VISION

We see a future where we are an industry leader who is positively impacting lives for the next 100 years and beyond.

## OUR BEHAVIORS

### Do Right Always

- › Respect people, safety, environment and the law
- › Follow through on commitments
- › Share openly and accurately
- › Make it better

### Stay With It

- › Show resilience
- › Lean into challenges
- › Support each other
- › Consider the implications

### Think Beyond Possible

- › Offer solutions
- › Step up and lead
- › Don't settle for "good enough"
- › Embrace new opportunities

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