MURPHY OIL CORPORATION

2023 SUSTAINABILITY REPORT

ENERGY THAT EMPOWERS PEOPLE

do right always | think beyond possible | stay with it

MURPHY
OIL CORPORATION

1 About This Report

The Murphy Oil Corporation 2023 Sustainability Report contains data and information regarding the environmental, social and governance (ESG) issues relevant 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 the Sustainability Accounting Standards Board (SASB), Task Force on Climate-related Financial Disclosures (TCFD), Global Reporting Initiative (GRI), Ipieca and API. In addition, we consider the feedback from key ESG raters.

For ease of locating disclosures by framework, we have included Content Indices at the back of this report on page 109. Unless otherwise noted, the data and information are reported at a total enterprise level, for assets under our operational control and for calendar year 2022. All currency references are in US dollars.

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

Supporting Industry Efforts for Consistent and Comparable Reporting

We participate in several industry initiatives working to improve sustainability reporting. One such initiative is with API on its Climate-related Reporting Initiative. The aim of this initiative is to develop more consistent and comparable reporting of key greenhouse gas (GHG) indicators in a template form for voluntary use by individual companies. Further details can be found on the **API website**. For Murphy's API Template for GHG Reporting, please see page 105. We also participate in Ipieca's Scope 3 Task Force of its Climate Change Group.

Internal and External Assurance

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 leadership 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 2022 total Scope 1 and Scope 2 GHG emissions. For ERM CVS's Independent Assurance Statement, please see page 107.

Restatements

As we improve our sustainability reporting year-on-year, we note that it may be necessary to restate our prior year data. Reasons for restatements could include changes in reporting boundaries, metric definitions, 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.

No restatements were made in this year's report.

Key to Abbreviations

BBL	Barrel
CO_2e	Carbon Dioxide Equivalent
MBOE	Thousand Barrels of Oil Equivalent
MBOEPD	Thousand Barrels of Oil Equivalent per Day
MBOPD	Thousand Barrels of Oil per Day
MCF	Thousand Cubic Feet
mg/L	Milligram per Liter
MMBBL	Million Barrels
MMBOE	Million Barrels of Oil Equivalent
MMBTU	Million British Thermal Units
$mtCO_2e$	Metric Tons of Carbon Dioxide Equivalent

Related Publications and Documents

2022 Annual Report

2023 Notice of Annual Meeting & Proxy Statement

Corporate Governance Documents, including Policies and Charters

EEO-1 Filings

Your Feedback Is Welcome

For questions or feedback on our 2023 Sustainability Report, please contact us at **sustainability@murphyoilcorp.com**.

Additional Information

Visit **www.murphyoilcorp.com** for additional information.

Publication Date

August 2, 2023

Awards and Recognition

2022

- Recognized by the Greater Houston Partnership as a "Best Place for Working Parents"
- Received the United States President's Volunteer Service Award from the Houston Food Bank in recognition of 2021 voluntary efforts
- Named one of America's "Most Responsible Companies" for 2022 by Newsweek
- Named one of Houston's "100 Leading Companies" in 2022 by the Houston Chronicle
- Achieved United Way of Greater Houston's 2021-2022 Chairman's Division
- Received ISS Governance and Social score of 1, which is the best rating possible

2023

- Ranked as the highest-scoring company for 2021 ESG performance by Rystad Energy; peer group included 41 of the largest, unconventional, public oil and natural gas operators in North America
- Recognized by the Greater Houston Partnership as a "Best Place for Working Parents"
- Received the United States President's Volunteer Service Award from the Houston Food Bank in recognition of 2022 voluntary efforts
- Named one of Most "Trustworthy Companies in America" for 2023 by Newsweek
- Achieved United Way of Greater Houston's 2022-2023 Chairman's Division

Contents

Introduction

2 About This Report

4 Contents

6 Message to Our Stakeholders

8 Who We Are

10 Our Approach to ESG

16 2023 Sustainability Report Highlights

Environment

17 Environmental Protection and Conservation

18 Climate Change and Emissions

37 Water Management

45 Biodiversity Protection

48 Spills Management

49 Asset Integrity and Process Safety

52 Well Integrity

54 Chemical Stewardship

55 Seismicity

56 Waste Management

Safety

59 Protecting Our People

60 Health and Safety Oversight

61 Health, Safety and Environmental Management System

62 Safety Performance Monitoring and Measurement

63 Health and Safety Certification and Audit

64 Building a Culture of Safety

66 Contractor Management

67 Emergency Response and Preparedness

68 Industry Collaboration

68 Physical Security

Our People

69 Investing in Our People

70 Workforce Development Oversight

70 Diversity, Equity and Inclusion

73 Benefits and Wellness

74 Talent, Recruitment and Development

76 Employee Engagement

Community

77 Community Engagement

78 Community Engagement Oversight

78 Working With Communities

81 Investing in Our Communities

Governance

87 Governance and Responsible Business Practices

88 Governance Highlights

89 Stakeholder Engagement

90 Responsible Business Practices

95 Public Advocacy

95 Supply Chain Management

Performance

97 Performance Data and Assurance

98 Performance Data

105 API Template 2.0 for GHG Reporting

107 Independent Assurance Statement

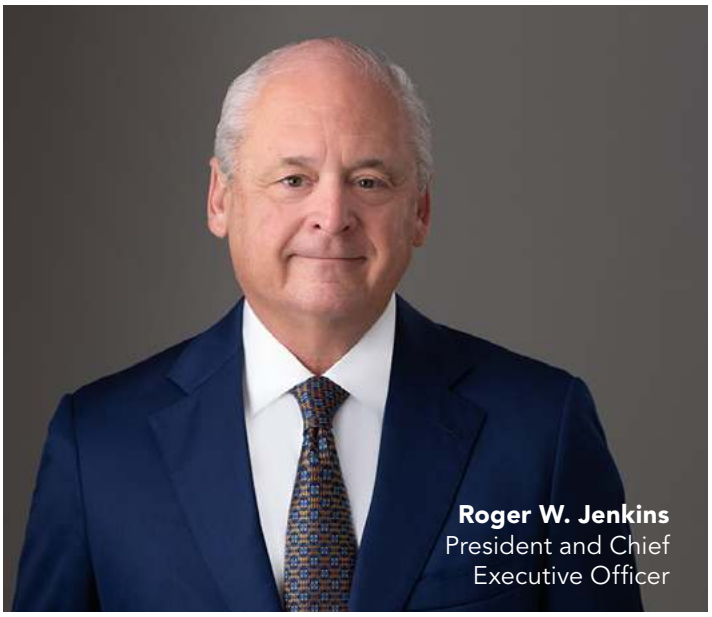
109 Content Indices

On the Cover
The cover of this report features a technical illustration of the Murphy operated King's Quay facility in the US Gulf of Mexico. Pictured here, King's Quay achieved first oil in 2022.

Message to Our Stakeholders

While 2022 was an outstanding year for Murphy, with our strong financial, operational and sustainability performance, it was also a stark reminder of our Company's important role in helping to supply society with secure, affordable and responsibly produced energy. Murphy is well positioned to continue to play our part in providing energy that empowers people with our strong operational expertise, disciplined financial strategy and a portfolio of comparatively advantaged oil and natural gas assets.

As this report illustrates, we remain steadfast in our focus and approach to sustainability, as we navigate the complex and evolving economic, environmental and regulatory landscape. We maintain a strong belief that actions speak louder than words and that progress should be demonstrated by doing and leading, not just by making empty aspirational promises. As one example of our focus on action, when compared to our peers, we are in the top quartile of GHG emissions intensity performance and well below the IOGP North America industry benchmark.



Roger W. Jenkins
President and Chief Executive Officer

Respect the Environment

Murphy remains committed to lowering its carbon emissions intensity in a financially prudent manner, as we work toward achieving our 2030 goals of zero routine flaring and a 15% to 20% reduction in GHG emissions intensity compared to 2019. In 2022, we recorded the lowest emissions intensity on each separate metric for GHG, methane and flaring since 2013, when we became an independent exploration and production company.

Over the past several years, we have continuously enhanced our responsible water management practices by seeking ways to reduce our reliance on freshwater sources. As a result, in the past year, we achieved the highest water recycling ratio in the Company's history. Our team continues to look for creative solutions to build on this success, whether by applying new technologies or forming industry water sharing arrangements.

We recognize the heightened importance of biodiversity to our stakeholders, and in response, we have expanded disclosures in the report regarding our approach to biodiversity protection. In general, we mitigate as much of this risk as possible by refraining from operating in protected areas. By SASB definitions, less than 1% of our proved reserves are in or near sites with protected conservation status or endangered species habitats.

Support Each Other

We are committed to conducting business that prioritizes the health, safety and security of all personnel, including employees, contractors and partners. It is important to me that safety is embedded in everything we do and that everyone returns home safely at the end of their shift. All our personnel have the authority, the right and the obligation to stop unsafe work – this is a fundamental tenet of our safety culture. Our entire team is diligently engaged in improving our safety performance, whether through internal and external audits and certifications, ongoing mandatory training and drills, or active contractor management.

Our employees are the core of our success, and we work to cultivate an environment where they feel valued, empowered and accepted. We provide a comprehensive benefits package and invest in programs to develop and engage our employees. Our efforts are being recognized, and Murphy has been named Best Place for Working Parents by the Greater Houston Partnership for a second consecutive year. We were also designated by Newsweek as one of America's Most Responsible Companies 2022 and Most Trustworthy Companies in America 2023.

We appreciate the significant economic and social impact we have on the communities in which we operate. We strive to invest in these communities through strategic partnerships, philanthropy and volunteerism, and from the onset, we work to address their concerns and those of other stakeholders. Murphy has been a long-standing supporter of education, and our El Dorado Promise initiative has provided scholarships for more than 3,200 students to attend colleges and universities since 2007. Our United Way partnership began over 50 years ago, and for the past eight years, we have been on the United Way of Greater Houston's Chairman's Division list of donors. For our efforts with the Houston Food Bank, we have been awarded the United States President's Volunteer Service Award for the second consecutive year.

Our purpose as a Company is to provide energy that empowers people.

Looking Ahead

Murphy has accomplished a great deal with our sustainability efforts since our first Sustainability Report was published five years ago, and we continue to formalize and integrate ESG initiatives across our entire business. We have proactively sought and received third-party assurance of our absolute Scope 1 and Scope 2 GHG emissions for the third consecutive year. To further reflect our commitment to safe and environmentally sound operations, in 2022 we increased the weighting of ESG metrics for compensation purposes in our Annual Incentive Plan from 15% to 20%.

While I am pleased with the progress we have made, we will continue to seek innovative ways to remain an oil and natural gas company that operates responsibly, safely and sustainably. We appreciate the engagement of all our stakeholders, and the feedback they contribute, which helps us to focus on achieving our long-term financial and sustainability goals and to ensure Murphy's future as an industry leader.

Thank you for your interest and continued support.

Roger W. Jenkins
President and Chief Executive Officer

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 691 employees as of year-end 2022.

The Company has a **rich and storied history** dating back to the early 1900s, when our founder, Charles H. 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 traded since 1956.

Murphy's Worldwide Health, Safety and Environmental (HSE) Policy and **Climate Change Position** provide clear and consistent direction to our workforce: 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 the communities in which we operate, as well as a welcomed partner of both independent and national oil companies.

We produce crude oil, natural gas and natural gas liquids primarily onshore and offshore in the US and Canada and explore in targeted areas worldwide. We have offices in Houston, Texas, and Ho Chi Minh City, Vietnam.

Sustainable assets that are safely operated with LOW CARBON EMISSIONS INTENSITY

HIGH-POTENTIAL EXPLORATION PORTFOLIO with industry-leading offshore capabilities

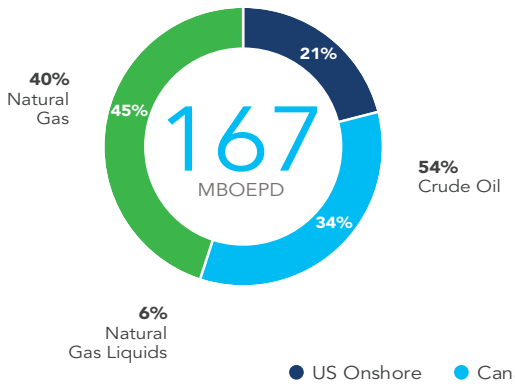
STRONG GENERATOR OF FREE CASH FLOW with capital allocation flexibility

FINANCIAL DISCIPLINE with more than a 60-year track record of returning capital to stockholders

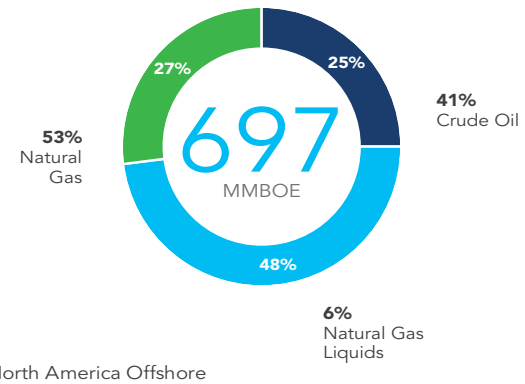
Supported by a multi-decade founding family, with MEANINGFUL BOARD AND MANAGEMENT OWNERSHIP

Production and Reserves

2022 Fiscal Year Net Production[1]



2022 Proved Reserves[1]



● US Onshore ● Canada Onshore ● North America Offshore

1 Production and Proved Reserves excludes noncontrolling interest, and represents only the amounts attributable to Murphy. Proved reserves are based on year-end 2022 third-party audited volumes using SEC pricing.

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 and 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

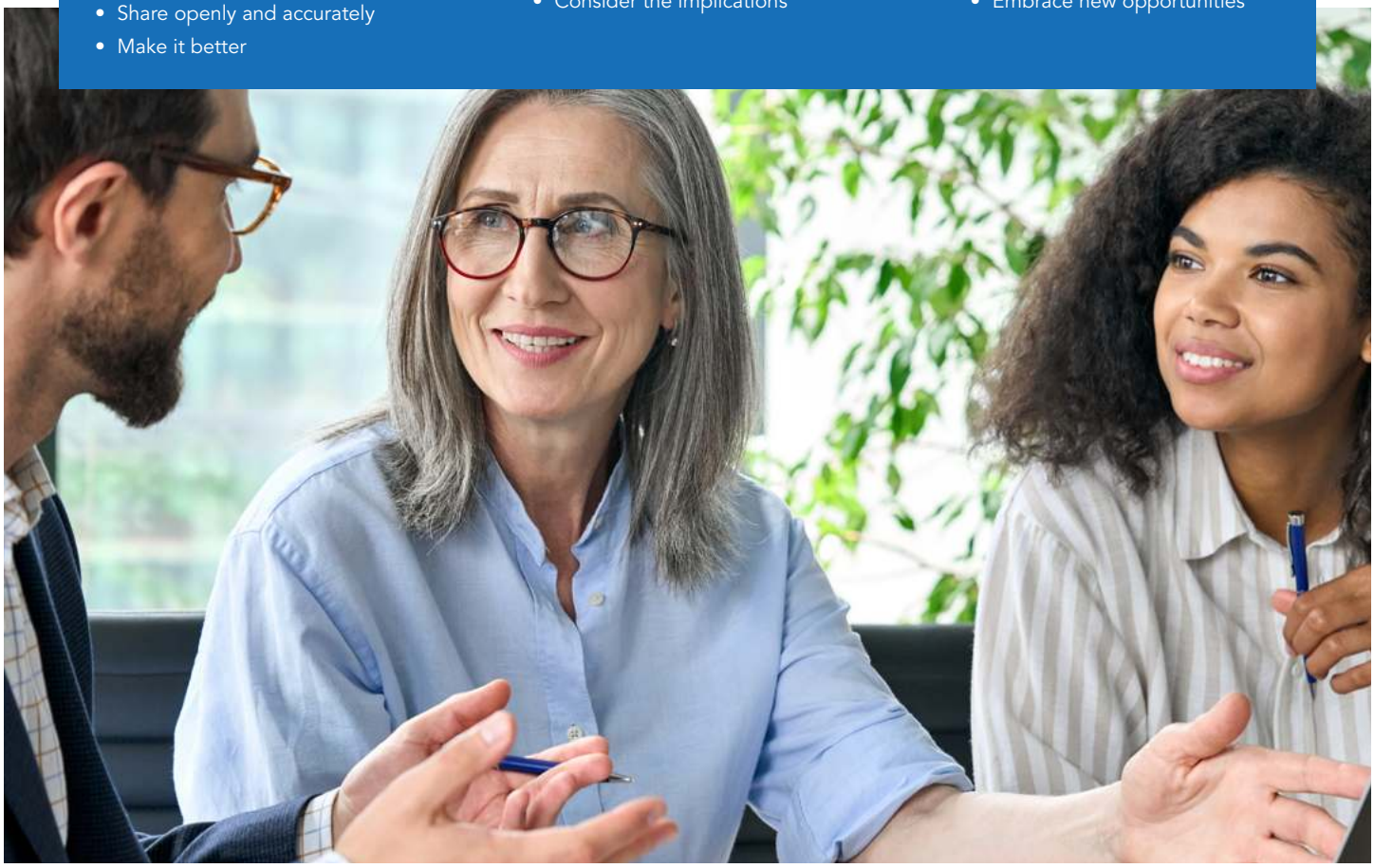
- Respect people, safety, environment and the law
- Follow through on commitments
- Share openly and accurately
- Make it better

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

Operating responsibly and protecting our workforce, communities and the environment is built into our Company DNA and the core values that guide how we work every day. 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 are not 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.

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

Communicating our ESG commitments, plans and progress is key to enhancing our business, improving operations and strengthening our credibility with our stakeholders, see page 2.

We view our stakeholders as important partners and actively engage with them regularly, see page 12.

We continually advance our comprehensive approach to managing ESG impacts, risks and opportunities, see page 12.

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, see page 14.

We are committed to conducting our business in a responsible manner that protects and conserves the environment and that protects the health, safety and security of all personnel, see page 17 and page 59.

Responding to Climate Change Is Central to Our ESG Efforts

Today, climate change is at the center of most ESG discussions, 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, presents important risks and opportunities for our industry and our Company. We believe our longtime commitment to operating responsibly and using resources efficiently 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 2021. We have made significant progress in reducing our GHG emissions – reducing our absolute Scope 1 and Scope 2 GHG emissions by 51% and our GHG emissions intensity by 53% since 2018 and achieving top-quartile GHG emissions intensity performance among our peers. To drive further progress, we are assessing pathways to net zero emissions. Read more about our approach to climate change and emissions reductions in the Environmental Protection and Conservation section, see page 17.

Our Climate Change Position

Find out more about our **climate change position** on the Murphy Oil Corporation website.

Our goal is to help balance society's need for affordable, reliable, secure and responsibly produced energy with the protection of the environment and climate.

Contributing to the United Nations Sustainable Development Goals

Our purpose as a company – to provide energy that empowers people – is an important element of sustainable development. In 2021, we began an effort to map our ESG efforts and priorities onto the UN 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:

A content index detailing how we contribute to the SDGs can be found on page 126.

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, academics and nongovernmental organizations through:

- Direct channels such as focus groups and interviews, investor non-deal roadshows and outreach, 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 who are willing to engage with us. Maintaining and building these relationships is important to us; and we use the stakeholders' input to guide, improve and/or formalize our internal policies. For more information on our Stakeholder Engagement process, see page 89.

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.

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 graphic on the right illustrates our core ESG focus areas, and we continue to advance our programs and performance on these key issues.

To help determine the key sustainability topics we should focus on, we annually conduct a materiality assessment using the process prescribed by Ipieca/API/IOGP. For the purposes of our sustainability reporting, we have adopted Ipieca/API/IOGP'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, interviews with senior management, 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 the 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 below 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, to identify areas of improvement and, where appropriate, make improvements.

Based on this analysis for this year, we identified nine ESG areas of greatest importance to our stakeholders and our Company.

Our ESG Focus Areas

ENVIRONMENT

- Climate change, GHG emissions and energy transition
- Water management
- Biodiversity

SOCIAL

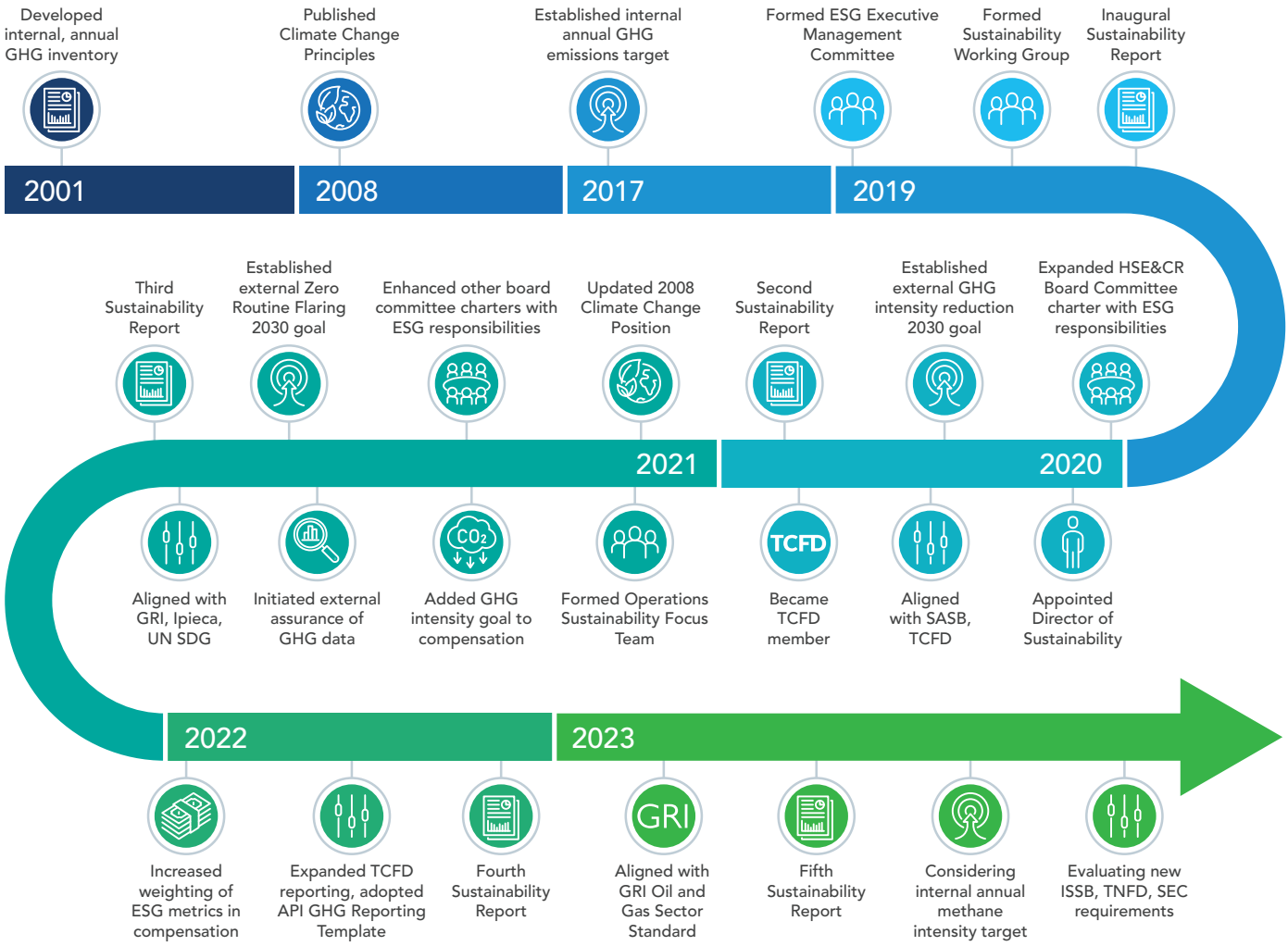
- Occupational health and safety
- Human capital management, including diversity, equity and inclusion (DE&I)
- Community and stakeholder engagement

GOVERNANCE

- Board diversity, refreshment and expertise
- Cybersecurity
- Risk management

Our ESG Journey: Five Years On, We Remain Steadfast in Our Efforts

ESG elements have long been in our DNA and core values, but our process became more formalized in 2019, with the formation of our ESG Executive Management Committee and the publication of our first Sustainability Report. We realized that our continued success would benefit from a multiyear roadmap to guide our focus and reporting. From our initial report five years ago, we have expanded our efforts yearly to align with established ESG standards and frameworks, and responded to feedback from stakeholders. We continue to educate our workforce on the importance and benefits of ESG; integrate sustainability across our entire business; and, increase disclosures to meet stakeholders' expectations. With the publication of our fifth Sustainability Report, we remain committed to the five reporting principles of relevance, transparency, consistency, completeness and accuracy. The ESG reporting landscape is ever-evolving – for example, with the release of new frameworks and requirements by the International Sustainability Standards Board (ISSB), Taskforce on Nature-related Financial Disclosures (TNFD) and the US Securities and Exchange Commission (SEC) – and we will strive to keep pace accordingly.



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.

MURPHY OIL CORPORATION BOARD OF DIRECTORS

ESG TOPICS REVIEWED AT LEAST ANNUALLY

- Board Evaluation Process
- Director Nominee Selection Process
- Shareholder Engagement
- Enterprise Risk Management
- Murphy Ethics Hotline Report
- Compliance Update
- Political Contributions
- Lobbying Activities
- Cybersecurity
- Information Security
- Executive Compensation
- Human Capital Management
- Diversity, Equity and Inclusion
- Health, Safety and Environmental Performance
- Climate Change Matters
- GHG Emissions Goals and Performance
- Current and Emerging ESG Trends

BOARD COMMITTEES WITH ESG-FOCUSED RESPONSIBILITIES

AUDIT

Holds oversight responsibility for reviewing programs related to financial risk, cybersecurity, and compliance with the Company's Code of Business Conduct and Ethics.

COMPENSATION

Holds oversight responsibility for reviewing the Company's key human capital management strategies.

HEALTH, SAFETY, ENVIRONMENT AND CORPORATE RESPONSIBILITY

Holds oversight responsibility for the Company's approach to sustainability. The Committee oversees not only compliance with, and responses to, applicable laws and regulations, but also the evolution of trends and emerging issues as the Company develops, reviews and assesses leading practices that drive the Company's commitment to principles of sustainability.

NOMINATING AND GOVERNANCE

Holds oversight responsibility for developing criteria for Board membership that encourages a diversity of backgrounds and perspectives, including diversity of race, ethnicity, gender and national origin, and actively seeks individuals qualified to become Board members for recommendation to the Board. The Committee also oversees the Company's lobbying activities and political spending, and reviews current and emerging governance trends, issues and concerns that may affect the Company's business, operations, performance or reputation.

ESG EXECUTIVE MANAGEMENT COMMITTEE

SUSTAINABILITY WORKING GROUP

Board Committees

The Health, Safety, Environment and Corporate Responsibility (HSE&CR) Committee leads the Board's oversight of sustainability issues and strategy development, including climate, environmental performance, health and safety, and community engagement.

The following Board committees have additional oversight of certain ESG-focused responsibilities in accordance with their charters:

- The **Audit Committee** is responsible for reviewing programs related to financial risk, cybersecurity and compliance with the Company's Code of Business Conduct and Ethics.
- The **Compensation Committee** is responsible for reviewing the Company's key human capital management strategies.
- The **Nominating and Governance Committee** is responsible for developing criteria for Board membership that encourages a diversity of backgrounds and perspectives, including diversity of race, ethnicity, gender and national origin, and actively seeks individuals qualified to become Board members for recommendation to the Board. The Committee also oversees the Company's lobbying activities and political spending, and reviews current and emerging governance trends, issues and concerns that may affect the Company's business, operations, performance or reputation.

To view detailed responsibilities for each Board Committee, please refer to our **website**.

ESG Executive Management Committee

Murphy's ESG Executive Management Committee monitors and manages sustainability risks and opportunities. This committee is comprised of our President and Chief Executive Officer and senior executives representing key functional areas across the Company.

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 DE&I.
- Monitor and advise the Company on current and emerging ESG matters, including risks and opportunities, that may affect its business, operations, performance or reputation 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.
- Review and provide comments to the Company regarding policies, reports and communications on 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. The committee may delegate other responsibilities to other working groups or subcommittees.

ESG Executive Management Committee

Reports to HSE&CR Board Committee

Chaired by President and Chief Executive Officer

Title and functions of current members:

President and Chief Executive Officer

Executive Vice President and Chief Financial Officer

Executive Vice President, Operations

Senior Vice President, General Counsel and Corporate Secretary

Vice President, Human Resources and Administration

Vice President, Investor Relations and Communications

Vice President, Sustainability

Director, Governance and Legal Services

Sustainability Working Group

Reports to ESG Executive Management Committee

Chaired by Vice President, Sustainability

Comprised of representatives from the following business units:

Finance and Treasury

Health, Safety and Environmental

Human Resources

Information Technology

Investor Relations and Communications

Law

Operations

Risk Management

Supply Chain Management

Sustainability

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 and efforts, as directed by the ESG Executive Management Committee. To reflect the increased importance of understanding and mitigating cybersecurity risks, we added a representative from our Information Technology function to the working group.

Operations Sustainability Focus Team

The Operations Sustainability Focus Team, comprised of operations and HSE specialists, was formed in 2021 to identify, evaluate and implement technologies to support our corporate climate and emissions strategy and goals. The team maintains a funnel of project ideas prioritized by impact, feasibility and cost, addressing both the short and long term.

See the Governance and Responsible Business Practices section on page 87 for more on our approach to other governance issues.

MURPHY OIL CORPORATION

2023 SUSTAINABILITY REPORT HIGHLIGHTS

committed to transparent, consistent and accurate reporting

ADVANCING OUR CLIMATE GOALS

15%-20% REDUCTION
IN GHG EMISSIONS INTENSITY
by 2030 compared to 2019

ON TRACK

ZERO
ROUTINE FLARING
by 2030

ON TRACK

CONTINUED ENVIRONMENTAL STEWARDSHIP

from **2019** to **2022**

- **25%** GHG emissions intensity
- **34%** methane intensity
- **60%** flaring intensity

HIGHEST
WATER RECYCLING RATIO
in Company history

ZERO
IOGP SPILLS
in 2021 and 2022

POSITIVELY IMPACTING OUR PEOPLE AND COMMUNITIES

from **2019** to **2022**

- **29%** improvement in Total Recordable Incident Rate (TRIR)
- **63%** improvement in Lost Time Incident Rate (LTIR)
- **33%** minority representation among US employees
- more than **$3 MILLION** in charitable contributions over the last three years
- more than **3,200** students received El Dorado Promise scholarships since 2007

STRONG GOVERNANCE OVERSIGHT

well-defined Board and Managerial oversight and management of ESG matters

third consecutive year of **THIRD-PARTY ASSURANCE** of GHG Scope 1 and 2 data

BOARD OF DIRECTORS STATISTICS

- **90%** independent
- **30%** female
- **10%** **DIVERSE** by race

GHG INTENSITY GOAL IN ANNUAL INCENTIVE PLAN added in 2021

ESG METRICS IN ANNUAL INCENTIVE PLAN increased from 15% to 20% in 2022

CYBERSECURITY continuous enhancement

Our goal is to help balance society's need for affordable, reliable, secure and responsibly produced energy with the protection of the environment and climate.

AWARDS AND RECOGNITION

BEST PLACE FOR WORKING PARENTS
by the Greater Houston Partnership in 2021 and 2022

US PRESIDENT'S VOLUNTEER SERVICE AWARD
by the Houston Food Bank in 2021 and 2022

CHAIRMAN'S DIVISION
by United Way of Greater Houston in 2021-2022 and 2022-2023

MURPHY OIL CORPORATION

We believe in providing energy that empowers people.

2 Environmental Protection and Conservation

lowest
Emissions Intensities
GHG, methane and flaring since 2013

highest
Water Recycling Ratio
in Company history

Zero IOGP Spills
in 2021 and 2022

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 **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.

Over the past decade, we have transformed the Company into an independent exploration and production player. In 2019, we acquired deepwater US Gulf of Mexico assets, and we fully divested our operations in Malaysia. Through these strategic transactions and others, we have divested refining, oil sands and heavy oil assets, consequently reducing 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 intensity in the industry – account for a large share of our operations.

At the tactical level, Murphy strives to continually improve the performance of existing assets by making investments in equipment upgrades, effective maintenance programs and new technologies, which help 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 Health, Safety and Environmental (HSE) Management System (see page 61). This management system helps us focus our efforts related to reducing greenhouse gas (GHG) and other air emissions, improving energy use and efficiencies, protecting water resources and ecosystems, and managing waste and land impact.

Additionally, we provide training and awareness programs on our environmental management system for employees and contractors. Across all our domestic and international assets, we regularly conduct internal environmental audits against our environmental management checklist, as defined in the HSE Management System. We also participate in external environmental audits with regulatory agencies such as the Texas Railroad Commission, Texas Commission on Environmental Quality, US Bureau of Safety and Environmental Enforcement, Alberta Energy Regulator and British Columbia Energy Regulator.

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, secure 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 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. We continue to improve our reporting of methane and flaring metrics.

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 and Progress

15%-20%
REDUCTION
IN GHG EMISSIONS INTENSITY
by 2030 compared to 2019

ON TRACK
25% REDUCTION
achieved in 2022

ZERO
ROUTINE FLARING
by 2030

ON TRACK

Our TCFD Journey: Progressively Improving Our Climate Disclosures

The **Task Force on Climate-related Financial Disclosures (TCFD)** has developed a framework for public companies and other organizations to more effectively disclose climate-related risks and opportunities through their existing reporting processes. TCFD's goal is that through widespread adoption, financial risks and opportunities related to climate change will become a natural part of companies' risk management and strategic planning processes.

In 2020, we became a TCFD member and adopted its framework to begin our climate-related reporting. Since then, we have expanded our disclosures year-on-year to align with the framework. The table below outlines our enhancements for 2021 to 2023. For our TCFD Content Index, please see page 112.

	TCFD Core Elements	Efforts and Reporting Enhancements
Governance	The organization's governance around climate-related risks and opportunities (page 27)	• Enhanced charters of three Board committees to reflect their continued oversight of certain ESG-focused responsibilities • Reviewed and updated our climate change position, initially developed in 2008 • Conducted an assessment on the alignment of our climate change position with that of our key trade associations
Strategy	The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning (page 29)	• Expanded the climate-related scenario analysis to include the International Energy Agency (IEA) Net Zero Emissions by 2050 Scenario (NZE) • Added a more comprehensive discussion of climate-related risks and opportunities, including potential time horizon and financial impacts
Risk Management	The processes used by the organization to identify, assess and manage climate-related risks (page 33)	• Augmented discussion on how we identify and assess climate-related risks • Expanded discussion of mitigation strategies for identified risks and efforts for identified opportunities
Metrics and Targets	The metrics and targets used to assess and manage relevant climate-related risks and opportunities (page 36)	• Reported our performance against our climate goals • Engaged a third party to conduct an independent assurance of our absolute Scope 1 and Scope 2 GHG emissions for the third consecutive year • Added an annual GHG emissions intensity goal as a performance metric in our Company's Annual Incentive Plan in 2021 • Reported our estimated Scope 3, Category 11: Use of Sold Products GHG emissions • Expanded climate-related metrics to align with the Sustainability Accounting Standards Board (SASB) for oil and natural gas exploration and production companies and the Global Reporting Initiative (GRI)

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 through an internal, annual Worldwide GHG Emissions Report. We have continually refined our emission surveys as we strive for improved measuring and tracking. We report emissions on an operated basis per Ipieca/American Petroleum Institute (API)/International Association of Oil & Gas Producers (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 (Federal) – Canadian Environmental Protection Act
- Canada (Alberta) – Emissions Management and Climate Resilience Act
- Canada (British Columbia) – Greenhouse Gas Industrial Reporting and Control Act

For other overseas operations, a modified 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.

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 investments to reduce GHG and other emissions, spending approximately $115 million from 2015 to 2022. We follow a rigorous inspection and preventative maintenance program to keep operations running cleanly and efficiently. Our operations and facility design teams work collaboratively to incorporate GHG reduction technologies and practices into our existing operations and new infrastructure.

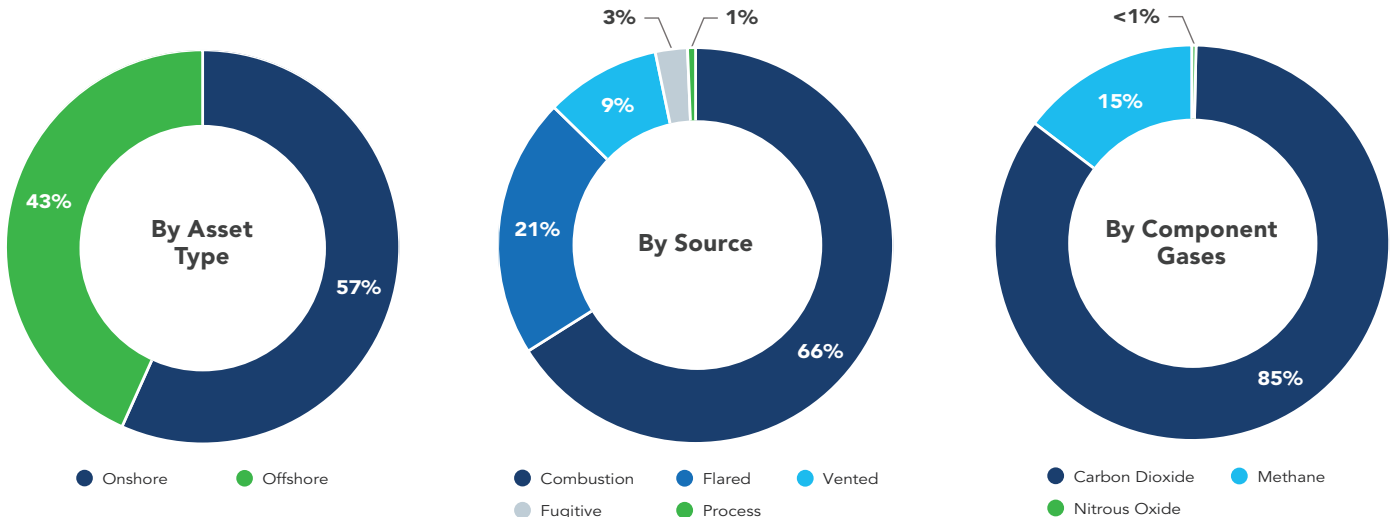
In 2021, we formed the Operations Sustainability Focus Team, comprised of operations and HSE specialists, to identify, evaluate and implement technologies to support our corporate climate and emissions strategy and goals. The team maintains a funnel of short- and long-term project ideas prioritized by impact, feasibility and cost. To support their work, we have also established internal technical sharing sessions that include asset operations, engineering, subsurface, drilling and completions, and environmental specialist functions, to share best practices and evaluate technologies and practices across our business units and functions.

We have made progress in reducing our emissions through our targeted efforts. In the last five years, between 2018 and 2022, our absolute Scope 1 and Scope 2 emissions fell by 51%, and total Company GHG emissions intensity decreased by 53%. Our emissions intensity decreased by 25% from 2019 to 2022, 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 have also met the GHG intensity target defined in our Annual Incentive Plan (AIP) for compensation since its inclusion in 2021.

When compared to our peers, the reduction of our annual emissions intensity is strong — for example, it has been well below the IOGP North America industry benchmark (see following chart) — and our 2030 goal is relatively aggressive. One factor that contributed to meeting our 2030 goal in 2022 is the overall increased production contribution from our low-intensity offshore business, as the King's Quay facility reaches peak and plateau production. We continue to explore whether we can maintain our current intensity level, and plan to re-evaluate the 2030 goal depending on production levels of our various assets.

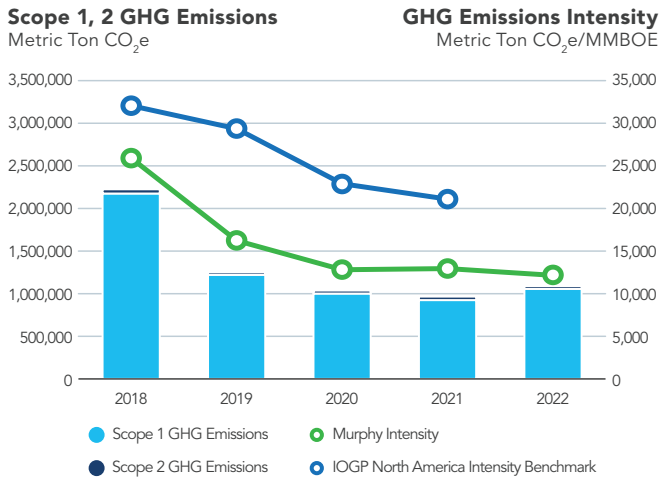
We continue to focus on implementing emissions-reducing initiatives, in line with best practices from organizations like the API's The Environmental Partnership and the Texas Oil & Gas Association (TXOGA), to ensure the reductions are sustainable under future increased activities.

Distribution of 2022 Scope 1 GHG Emissions



GHG Emissions and GHG Emissions Intensity	2018[2]	2019	2020	2021	2022
Scope 1 GHG Emissions Metric Ton CO_2e	2,174,224	1,219,971	1,002,338	925,239	1,056,513
Scope 1 Carbon Dioxide Metric Ton CO_2e			819,017	783,664	898,087
Scope 1 Methane Metric Ton CO_2e			180,227	138,316	154,960
Scope 1 Nitrous Oxide Metric Ton CO_2e			3,094	3,259	3,466
Scope 2 GHG Emissions Metric Ton CO_2e	51,499	30,349	33,974	42,028	31,707
Scope 1 and Scope 2 GHG Emissions Metric Ton CO_2e	2,225,724	1,250,320	1,036,312	967,267	1,088,220
GHG Emissions Intensity Metric Ton CO_2e/MMBOE	25,912	16,234	12,809	12,950	12,151

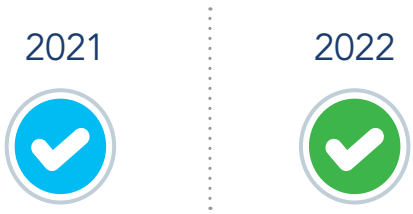
Total GHG Emissions and Intensity[2]



Source: IOGP and Murphy internal

Meeting AIP Target Range GHG Intensity Metric

Since Inclusion in 2021



2 2018 data includes Malaysia.

Improving Our Emissions Performance: Methane

Murphy is highly focused on reducing methane emissions. We are working to develop more targeted and effective methane emissions reduction programs by increasing our understanding of methane emissions from an asset level and by source types. For example, in 2022, 65% of our methane emissions were from our onshore assets, and 41% from onshore pneumatic equipment (see below). Consequently, our reduction emphasis has been and continues to be on our onshore operations, whether it is building redundant pipelines to minimize flaring due to downstream third-party constraints or investing in technologies that reduce venting and fugitive emissions, all discussed below.

Onshore Methane Reduction Efforts:

Venting – Pneumatic Equipment

- In Canada, working to replace fuel gas-actuated pneumatic controllers and chemical pumps with instrument air-actuated pneumatic controllers and chemical pumps at well sites and facilities.
- In 2022, all new Eagle Ford Shale well pads in Texas were installed with instrument air compressors. Additionally, 80 units were purchased for site conversions to instrument air in 2023. Once installed, these air-actuated pneumatics will reduce overall use of the fuel gas by the pneumatic controllers by approximately 20%.
- In place of pneumatics, all new chemical pump installations now utilize electric pumps powered by the grid or solar.

Venting – Other Sources

- Installing piping on new Eagle Ford Shale gas-lifted wells to reduce blowdown-related vented emissions.

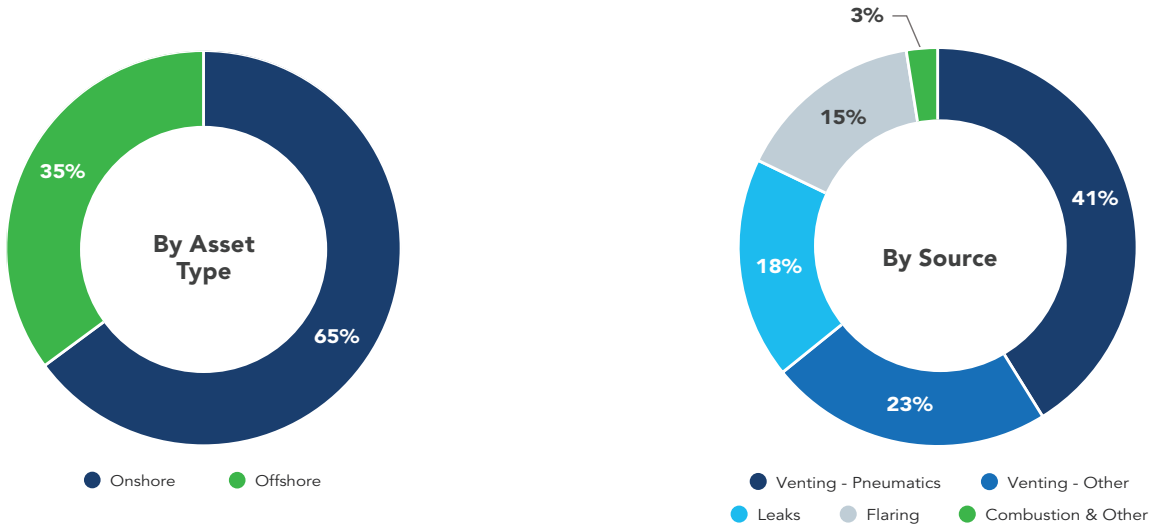
Leaks

- Utilizing forward-looking infrared (FLIR) cameras, for leak detection and repair (LDAR), to reduce methane leaks by routine monitoring and repairing.
- Piloting continuous monitoring of methane and volatile organic compounds (VOCs) at three Eagle Ford Shale facilities.
- Installed thermal and optical cameras in our onshore Canadian operations for methane, leak and security monitoring.

Flaring

- Focusing on process efficiencies to reduce facility downtime that lead to flaring and venting.
- Implementing new well tubing designs and plunger-assisted gas lift installations to reduce lift gas requirements for artificial lift. In the event there is a process upset, having lower lift gas volumes translates to lower flared gas volumes and fuel gas consumption.
- Adding pipeline infrastructure to reduce flaring and venting at legacy assets.
- Began replacing existing natural gas-driven Vapor Recovery Units (VRUs) with electric-powered VRUs.

Distribution of 2022 Methane Emissions



STAY WITH IT

Eliminating Methane Vent Sources in Our Onshore Canada Operations

Capturing or eliminating methane routine venting is a key component of Murphy's GHG reduction strategy. Switching from natural gas to compressed air-driven systems to operate pneumatic equipment and chemical pumps eliminates these venting sources and also provides an economic opportunity, as the natural gas is conserved and sold, rather than being vented.

For every pneumatic device that uses air actuation, 14 to 24 $mtCO_2e$ is eliminated per device, per year, depending on its manufacturer-designed low bleed[3] vent rate. By replacing natural gas-driven chemical pumps with air or electricity-driven pumps, we can eliminate an additional 5 $mtCO_2e$ per pump per year of vented methane emissions.[4]

Offshore Methane Reduction Efforts

- In 2023, conducting methane leak detection surveys and completing remedial action to reduce methane emissions, see box below.
- Continuing to evaluate reduction opportunities and monitor technology advancements for offshore methane mitigation. Our evaluations thus far indicate that investing in onshore methane reductions will have substantially more impact than offshore investments.

DO RIGHT ALWAYS

Tackling Fugitive Emissions in Our Offshore Gulf of Mexico Operations

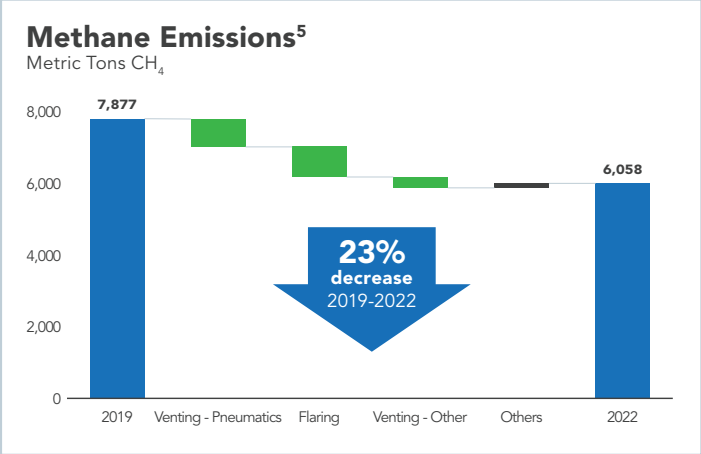
In 2023, Murphy initiated a flange management program to detect fugitive emissions and preserve the integrity of the flange connections. Optical gas imaging cameras were used for the inspection, and any detected emission sources were quickly remediated. We have completed this leak detection and repair on two of five offshore facilities, with a total of 7,400 flange connections being tested. In addition to ensuring connecting flanges are adequately maintained, the program aims to reduce 5,200 $mtCO_2e$. We plan to introduce the program at the remaining three facilities in the near future.

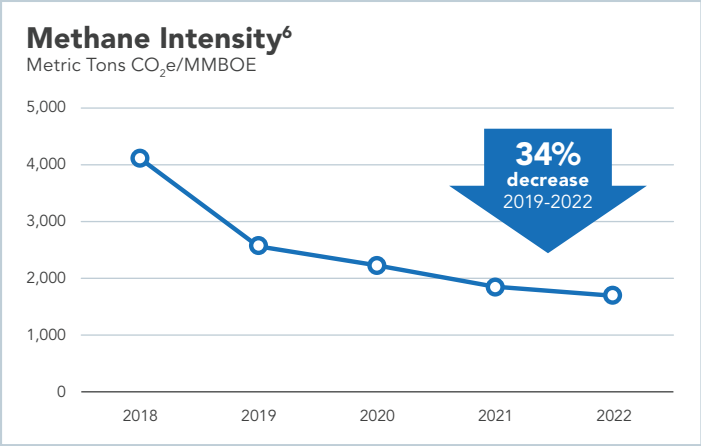
Impact of Reduction Efforts

As a result of our focused programs, we have reduced absolute methane emissions by 23% from 2019 to 2022, with reductions coming mostly from venting related to pneumatics and flaring. Our total Company methane intensity decreased by 34% from 2019 to 2022.

We continue to seek improvements to reduce our methane emissions and partner with industry groups to achieve these goals, including with the TXOGA and API's The Environmental Partnership. Consequently, if our operations perform as planned, we anticipate seeing further reductions in both absolute methane emissions and intensity for 2023.

We regularly assess our methane emissions performance against peers and industry leaders. Using this data as input, we are considering an internal methane intensity goal as a precursor to setting a possible future external goal.





3 Low bleed describes a pneumatic instrument that vents <0.17m^3/hr.
4 Pump manufacturer and chemical throughput dependent.
5 Scope 1 methane emissions.
6 2018 data includes Malaysia.

Improving Our Emissions Performance: Combustion

Combustion of fuel to run equipment, while critical to our operations, also represents a large source of emissions. Improving the efficiency of our combustion practices reduces associated GHG emissions, as well as emissions of nitrogen oxide (NO_X), sulfur oxide (SO_X) and VOCs. Strategies we are using to reduce combustion-related emissions include:

- **Onshore fracturing** – Murphy has shifted to using dual-fuel fracturing fleets in the Tupper Montney and Kaybob Duvernay in Canada and in the Eagle Ford Shale in Texas. Dual-fuel fleets partially displace diesel consumption with natural gas (field gas where readily available, or compressed natural gas, CNG). This is expected to reduce both GHG and NO_X emissions. In the Eagle Ford Shale, we continue to evaluate the use of electric fracturing units.
- **Onshore drilling** – In Tupper Montney, we use dual-fuel drilling rigs. In 2022, we piloted the use of a dual-fuel drilling rig in Eagle Ford Shale. We also evaluated technologies on the dual-fuel, including CNG-hydrogen blend, CNG with a combustion catalyst additive and CNG-hydrogen blend with a combustion catalyst additive.
- **Truck transportation** – We have replaced truck transportation in our operating fields to transport production and water for operations with pipelines whenever practical and cost-efficient.
- **Natural gas compressors** – In our onshore operations, we continue to add the latest catalyst technology. We also continued efforts with our compressor rental service provider to improve compressor runtimes and engine efficiency.
- **Electrification** – We continue to electrify facilities, pumping units and instrument air compressors.

Working With Partners on Emissions Reduction Opportunities

We also continue to seek opportunities to partner with service providers on emission-reducing innovations. In 2022, we participated in the ESG Plus pilot in partnership with ISNetworld. ISNetworld is our supplier/contractor management system, which screens and grades our contractors on various performance metrics and against our Company's policies and procedures. The pilot is aimed at helping our contractors and Murphy assess and document ESG performance, including desktop review and verification of their emissions data, and implementation assessments of ESG programs.

Improving Our Emissions Performance: Flaring

Flaring of natural gas is a controlled process for eliminating emissions of methane and VOCs. This elimination 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 improvement and asset reliability efforts 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. We have also continued to decommission certain existing flares in Tupper Montney to reduce emissions from the continuous pilot flare.
- Implementing facility slugging-prevention projects in the Eagle Ford Shale to reduce process fluctuations and upsets, thereby reducing downtime and flaring.
- Removing optionality to flare during flowback operations on our Eagle Ford Shale Tilden and Catarina wellpad designs.
- Extending our operated flowline and pipeline network and using third-party underutilized pipelines and infrastructure, where possible, to boost natural gas handling capabilities, reduce flaring and increase natural gas sales. For example, we reduced export constraints in the Eagle Ford Shale through the addition of secondary natural gas sales points.
- Introducing electronic control upgrades, in both our US and Canada onshore operations, to reduce upsets and provide data for continuous operational improvement.
- Improving our overall equipment reliability in the Eagle Ford Shale to drive down failures that can result in flaring.
- Monitoring flaring remotely at our Eagle Ford Shale wellpads through infrared optical cameras and other cameras.

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 2019 and 2022, our flaring intensity on a $mtCO_2e$ per MMBOE basis fell by 60%. In 2022, at our Eagle Ford Shale operations, we flared the least amount of natural gas per MCF since 2012, when we began tracking the data. As we work to achieve our commitment to reduce flaring, we anticipate continued improvement in the methane intensity of assets under our operational control.

OFFER SOLUTIONS

Managing Stranded Wells to Eliminate Routine Flaring and Conserve Natural Gas

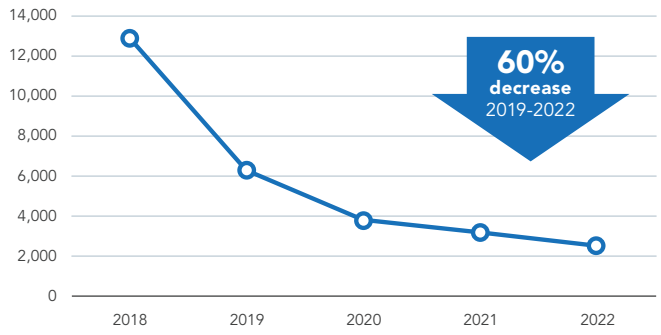
During 2022, our Engineering and Operations teams worked to find ways to connect onshore stranded well locations to pipelines to reduce routine flaring and increase revenue from natural gas being sold. A stranded well is an oil well that does not have a natural gas sales connection.

In our Canada operations, we identified potential pipeline routing options to flow production from several existing wellpads with stranded wells. Further, any new wellpads would be connected to the infrastructure to eliminate flares and other equipment that would have vented natural gas to the atmosphere. The team also proposed options for tie-ins to third-party pipelines, to eliminate flaring at all sites. All these options are currently being evaluated internally, as required by the regulator.

In our US onshore business, the Engineering, Operations and Asset Integrity teams worked together to inspect a pipeline and make tie-ins for two existing wellpads. These tie-ins eliminated on-pad flaring, and on-pad tanks and equipment that cause venting to the atmosphere.

Flaring Intensity[7]

Metric Tons CO_2e/MMBOE



7 2018 data includes Malaysia.

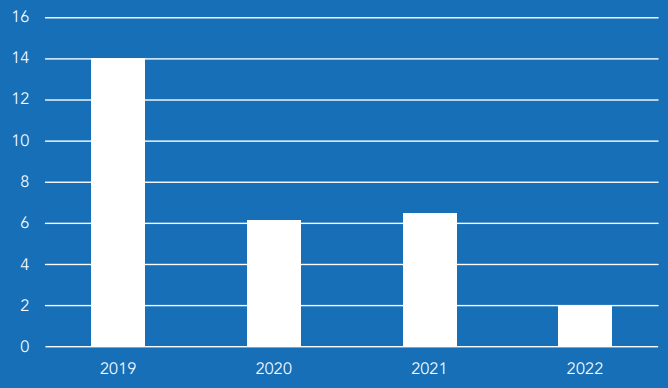
LEAN INTO CHALLENGES

Delivering Results With Data-Driven Projects at Eagle Ford Shale, Texas

Since 2017, we have installed electronic controls and data recording on our facilities, allowing us to identify causes of downtime events, which can result in flaring. We implemented projects to address flaring based on this data, as outlined below. These types of improvement projects contributed to our Eagle Ford Shale, Texas, operations flaring the lowest amount of natural gas per MCF of natural gas produced since we started tracking the data in 2012.

Eagle Ford Shale Flare Volume

% Natural Gas Production Flared



Improving Compressor Reliability: Compressors are used to increase the pressure of natural gas, to allow it to be transported for sale, and also for gas lift. Gas lift is a process where compressed natural gas is injected or recycled into the well to help fluids, primarily oil, flow more easily to the surface. When a compressor goes down, the natural gas is flared, which is undesirable, both from an environmental and an economic standpoint. Internal process reviews determined the most frequent cause of downtime is process upsets. To address these, we have undertaken a program of systematic equipment upgrades and retrofits, resulting in greater than 32% improvement in compressor downtime events from 2019 to 2022.

Achieving Process Stability on Natural Gas Trains: On a case-by-case basis, we have started to replace older vintage pneumatic pressure controllers with electronic pressure controllers at the inlet separators, compressor suctions and overpressure control valves on high-producing facilities. This replacement led to an average compressor runtime increase from almost 90% in 2019 to over 95% in 2022. The increment in runtime translated to fewer operational upsets and reduced flaring, while increasing production sales.

Committing to Emissions Reductions and Industry Partnership

Murphy is one of the 26 founding members of **The Environmental Partnership**, 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:

- **Implementing LDAR programs** – at all relevant assets, including regular optical gas imaging and timely repair of identified leaks.
- **Replacing high-bleed pneumatic controller emissions** – by designing new facilities to utilize air-actuated devices and working to replacing natural gas-actuated systems in existing facilities with primarily air-actuated systems.
- **Reducing emissions from pipeline blowdowns** – by reducing pressure and natural gas volumes prior to pipeline blowdowns, and when possible, routing natural gas to flare for destruction.
- **Implementing flaring-reduction best practices** – by following a range of best practices (see Improving Our Emissions Performance: Flaring, page 25).

Opportunities for the Future

In addition to emissions reduction efforts outlined above, we continue to evaluate low carbon energy and CO_2 mitigation opportunities. These include:

- Internal evaluations of geothermal energy to offset power generation from fossil fuel-based sources
- Collaboration with Educational Foundation of America and Mitchell Foundation, including funding a 2023 report on "The Future of Geothermal in Texas"
- Investigation of potential for CO_2 sequestration projects through strategic partnerships
- Evaluation of solar energy project potential for our current operating areas

Although none of these opportunities are operational at present, Murphy continues to dedicate resources to advance their commercial and technical feasibility.

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.

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.

There is continuing debate and development of standards for estimating Scope 3 emissions, partly because much of a company's Scope 3 emissions are also counted in other companies' Scope 1 and Scope 2 emissions. We will continue to monitor these developments in accepted standards. We also participate in Ipieca's Scope 3 Task Force of its Climate Change Group.

The table below outlines our estimated Scope 3 emissions for 2020 to 2022, on a net equity production basis.

Estimated Scope 3 Net Equity Emissions	2020	2021	2022
Category 11: Use of Sold Products Metric Ton CO_2e	21,500,000	20,600,000	21,900,000

Climate Governance

Our Board and senior management are actively engaged in overseeing our climate change and emissions strategy, which is based on our climate change position (see page 28).

Board Oversight

The Board is committed to overseeing climate-related risks and opportunities, as well as overseeing the executive leadership 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 leadership team. Our Board members' climate-related expertise can be viewed in the Skills and Expertise Matrix in our **2023 Proxy Statement**.

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, performance and external reporting. Additionally, the Audit Committee has oversight of our risk processes, which covers our climate-related risks, while the full Board reviews the Enterprise Risk Management (ERM) outcomes. The 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 (see page 14) for more details on the responsibilities of these Board committees, as well as the individual **Board Committee Charters**.

Climate-related information is reviewed at least biannually during the HSE&CR Committee meetings, as well as through frequent updates to the Board, to help ensure our members are apprised of climate matters. At least annually, external experts present to the Board on a broad range of topics relating to climate and sustainability. Additionally, our own internal personnel from Government Affairs, Enterprise Risk Management, Corporate Planning, Sustainability, HSE and Operations 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, including our 2030 goals of Scope 1 and Scope 2 GHG emissions reduction intensity and zero routine flaring
- Climate-related scenarios and energy transition matters
- Impact of climate-related risks and opportunities on our capital allocation process for our budget, long-range business plan and strategy

Management's Role
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. To keep abreast of climate-related issues and trends, the committee is briefed by employees who participate in industry associations, think tanks and policy discussions. See Climate Risk Management (page 33) for more detail.

This ESG Executive Management 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; other senior executives and the Enterprise Risk Manager, 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 (see page 90).

As mentioned in the Board and Managerial Oversight of ESG Topics section (see page 14), the Operations Sustainability Focus Team, comprised of operations and HSE specialists, is responsible for identifying, evaluating and implementing technologies to support our corporate climate and emissions strategy and goals.

Climate Change Position
We originally developed a set of climate change principles in 2008 to guide our climate strategy. In 2021, we reviewed and updated these principles into our current climate change position, with the commitment to re-evaluate the position periodically with our executive leadership team and HSE&CR Board Committee. As part of our **climate change position**, we endeavor to:

- Provide strong internal oversight and governance
- Communicate with transparency
- Further integrate risks and opportunities into our strategy and business planning cycle
- Promote operational excellence to minimize impact to the environment
- Collaborate with stakeholders and promote responsible policy solutions

Our positions on key ESG issues do not always align exactly with those of 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. To understand the alignment of our climate change position, highlighted above, with that of our key trade associations, we conducted an assessment in 2022. We selected organizations that received more than $50,000 a year from Murphy, and identified three associations: the API, Canadian Association of Petroleum Producers (CAPP) and National Ocean Industries Association (NOIA). Our analysis concluded that our climate change position is consistent with that of these three associations.

Climate Strategy

Our strategy and asset portfolio position the Company to deliver on the dual challenge of providing affordable, reliable and secure energy, while lowering the intensity of emissions associated with our activities. Through our annual strategic planning and capital allocation process, we build a strategy and business adaptable to alternative low-carbon pathways, by providing a qualitative and quantitative perspective of energy transition risks and opportunities. A key aspect of this process is scenario analysis, specifically climate scenarios, as described below.

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 and reputational** – 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 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. A detailed discussion of these risks and opportunities can be found in the Climate Risk Management section (see page 33).

Climate Scenario Analysis: Overview

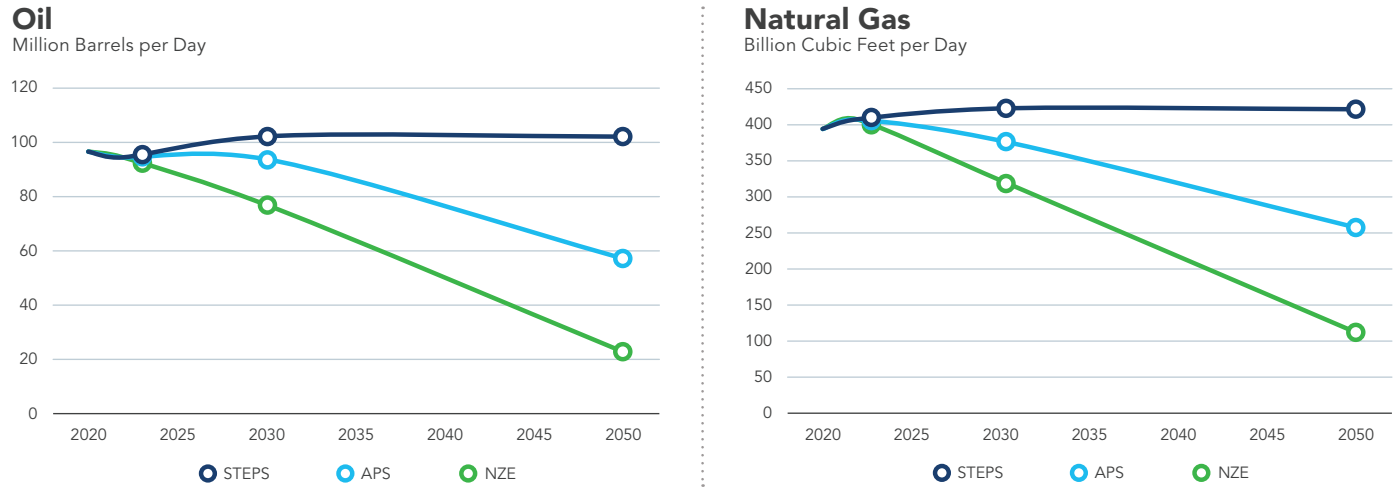
The scenario work of the IEA helps inform our view of long-term energy fundamentals. In particular, the Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS) and Net Zero Emissions by 2050 Scenario (NZE), as presented in the World Energy Outlook (WEO) 2022, frame potential oil and natural gas demand, as well as technology, policy and societal requirements tied to energy transition pathway objectives. The WEO 2022 edition does not include the Sustainable Development Scenario (SDS), which is another scenario used in prior editions to model a "well below 2°C" pathway. The APS in the 2022 edition is seen as achieving a temperature outcome close to the SDS.

The STEPS reflects the impact of announced policy intentions and targets – Nationally Determined Contributions (NDCs) – submitted by the Paris Agreement signatories to reduce their emissions. This scenario projects oil demand will peak in the mid-2030s. The oil demand is expected to increase by 8% by 2030 and then flatten, while natural gas demand remains fairly level, with a modest increase of 3% by 2050. This scenario projects that the global average temperatures will hit 2.5°C above pre-industrial levels in 2100.

The APS assumes that all climate commitments made by governments around the world, including NDCs and longer-term net zero and energy access targets, will be met in full and on time. This scenario projects that oil demand peaks in the mid-2020s, after which it is anticipated to fall by 39% and natural gas demand to decrease by 37% by 2050. The global average temperature rise in 2100 is around 1.7°C.

The NZE is more ambitious and goes further than the APS to align with the Paris Agreement objective of pursuing efforts to limit the temperature increase to 1.5°C. The NZE shows a narrow pathway to achieve net zero emissions by 2050 and does not rely on action in areas other than the energy sector. This scenario is highly dependent on several factors including: the timing and emergence of new innovations and technologies, the willingness of society to change behaviors, and global, lasting co-operation and policy changes. The NZE requires that oil demand fall by 76% and natural gas demand by 72% by 2050.

Global Oil and Natural Gas Demand

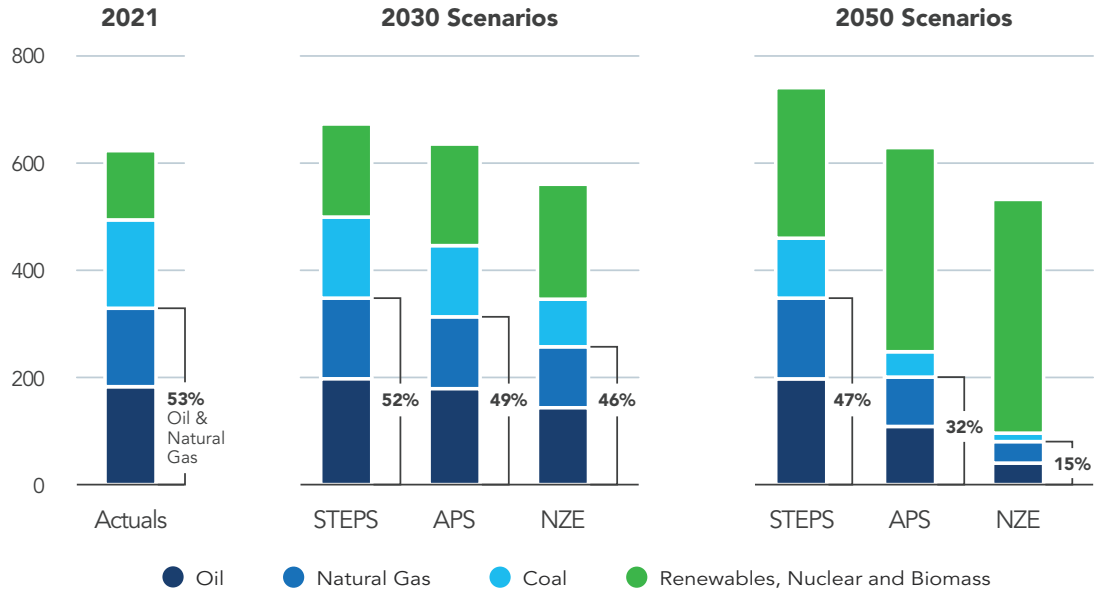


Source: IEA World Energy Outlook 2022

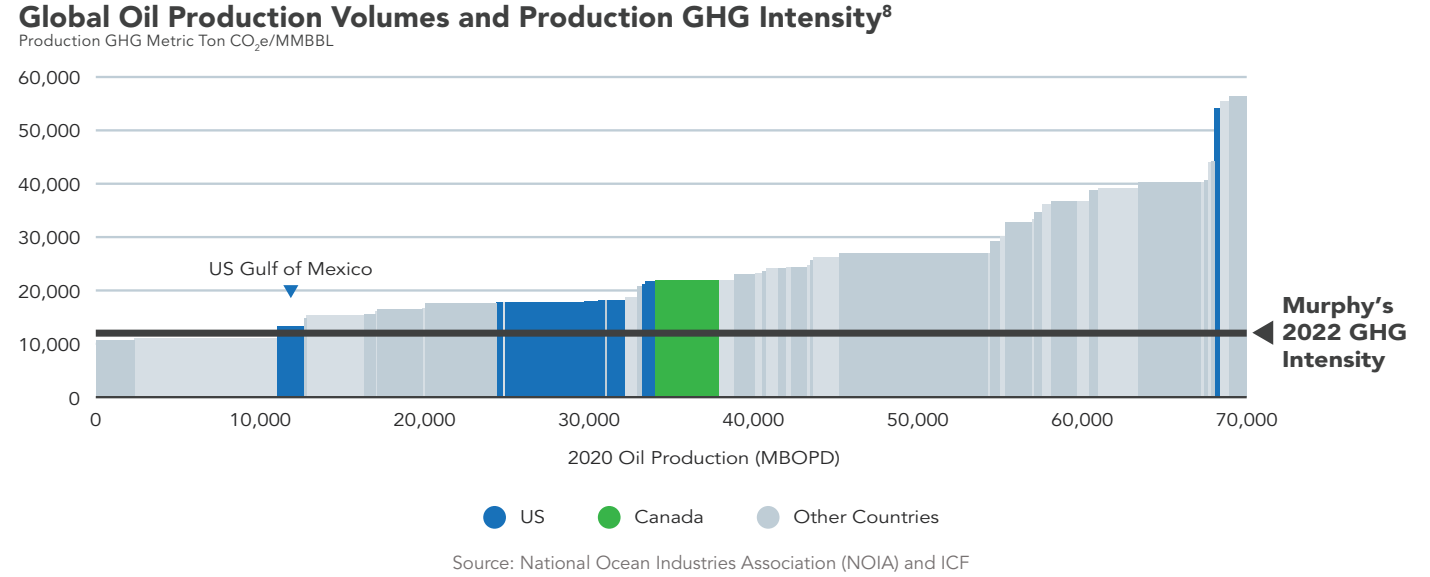
The IEA highlights the important role that both oil and natural gas continue to play in the energy mix in the STEPS and APS. By 2030, oil and natural gas combine to meet 52% (STEPS) and 49% (APS) of the overall world energy demand, respectively. Even by 2050, oil and natural gas remain key at 47% (STEPS) and 32% (APS). Due to natural depletion of existing production supply, there is a need for continued significant investment to meet these demand predictions. In the STEPS, annual upstream oil and natural gas investment averages around $660 billion between 2023 and 2030 and about $585 billion from 2031 to 2050. In the APS, annual investment averages about $545 billion between 2023 and 2030 and about $325 billion from 2031 to 2050.

Global Energy Demand by Fuel

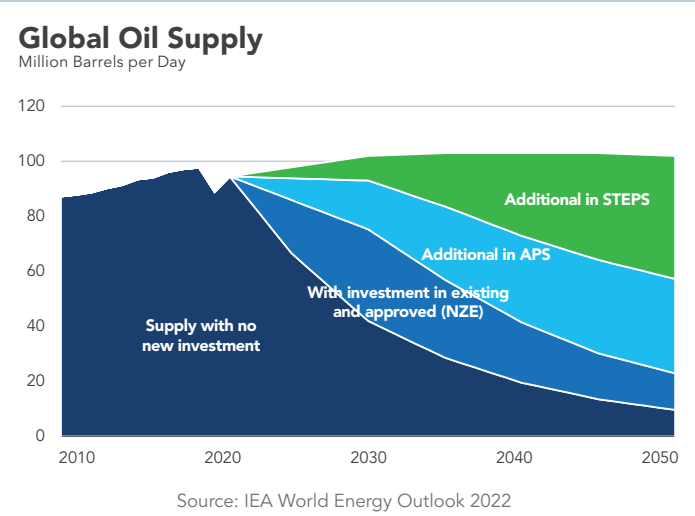
Exajoules (EJ)



Source: IEA World Energy Outlook 2022



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 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, as highlighted in the chart above. Our oil production is primarily from the US.



In the NZE, demand for oil and natural gas drops to levels that do not require new field developments beyond those already approved. However, investment in existing fields continues, with the annual upstream oil and natural gas investment averaging $435 billion between 2023 and 2030 and about $180 billion from 2031 to 2050. In the WEO 2021, the IEA highlights that if demand is higher than assumed in the NZE, the reduced investment in new fields would cause a supply shortage, leading to higher and more volatile prices. It further states that to counter this, a strong policy push to reduce oil and natural gas demand is required to meet the emissions goals of the NZE and to avoid the risk of market tightening. These statements hold true for WEO 2022's NZE scenario.

Climate Scenario Analysis: Methodology

We consider the APS and NZE when analyzing the resilience of our strategy. We also apply the associated crude oil, natural gas and CO_2 price projections to our annual Long Range Plan (LRP) base case through the end of life of our existing and known future producing assets. We do not consider the STEPS, as the associated price projections are significantly more favorable than our internal base price decks. The figures on page 32 reflect price projections from the STEPS, APS and NZE, with the Murphy base case.

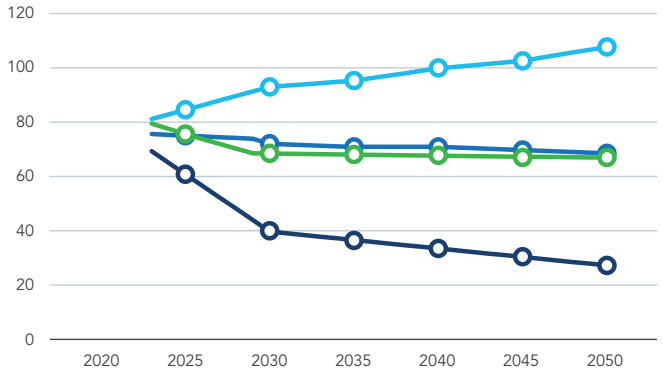
The Murphy base case internal carbon price is $50 per $mtCO_2e$, escalated 5% per annum, and applicable to our Scope 1 and Scope 2 equity emissions. Currently, only our Canadian operations are under a carbon regulatory program. However, by implementing an internal carbon price across our entire portfolio, we have insights as to the potential impact of future carbon regulations. The carbon price also provides a mechanism to standardize evaluation of emissions reduction opportunities across our portfolio.

8 GHG intensity is from the production stage only (that is, exclusive of crude transport, refining, petroleum product transport, petroleum product distribution and dispensing, and petroleum production utilization). The quantity of oil for each US region and foreign country is indicated by the width of each rectangle. The gray rectangles are individual foreign countries.

Commodity Price Scenarios[9]

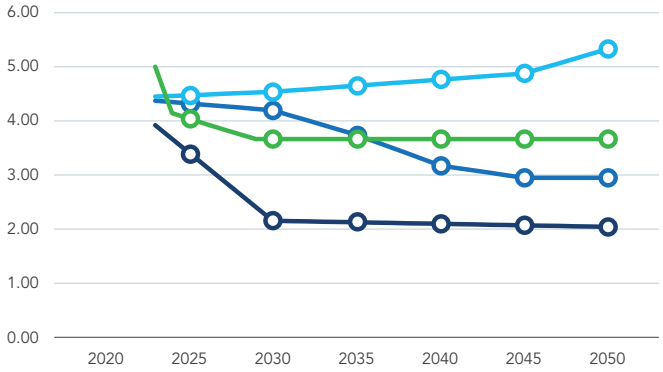
Crude Oil

2023 Real $ per Barrel



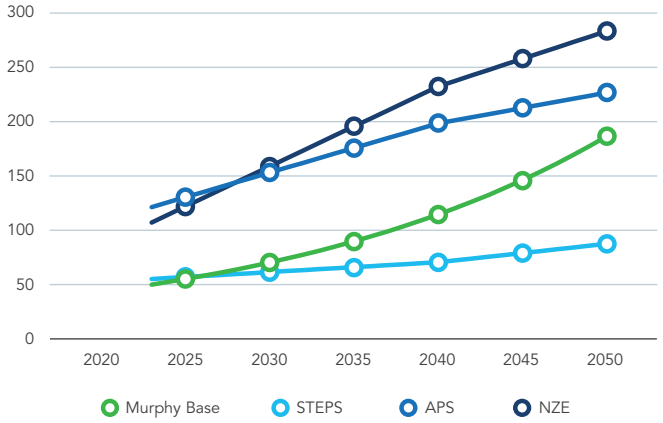
US Natural Gas

2023 Real $ per MMBTU



CO_2

2023 Real $ per Tonne



Source: IEA World Energy Outlook 2022

Climate Scenario Analysis: Outcomes

Relative to our internal forecasts, the APS forecasted oil price is slightly more optimistic, while the APS forecasted US natural gas price is slightly more pessimistic. The APS carbon price assumption is markedly higher than our carbon price assumption.

When we applied the APS oil, natural gas and carbon price projections and compared the impact to the net present value (NPV) of our portfolio of existing and known future producing assets, the Murphy portfolio value remained relatively flat to our LRP base case. The optimistic APS 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 "well below 2°C" transition pathway, as represented by the APS. As we perform the scenario analysis, we also confirm that our 2030 GHG emissions intensity target is still viable.

Maintaining the resilience of our strategy 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 intensities.

The NZE's significantly lower oil and natural gas prices, coupled with a much higher carbon price, result in lower NPV than our LRP base case. As discussed earlier, the NZE is highly dependent on many complex factors coming together in a relatively short timeframe. However, should aspects of the NZE scenario play out, our portfolio allows us the optionality to shift to the Tupper Montney natural gas asset in Canada. This presents an opportunity that is discussed further in the Climate Risk Management section (see page 33). Similar to the APS, in this scenario, our 2030 GHG emissions intensity target remains viable.

Since the NZE is a narrow pathway, we extended our analysis to look at the net zero emissions scenarios from another third party, IHS Markit, which is now part of S&P Global Commodity Insights. IHS Markit develops a set of proprietary climate scenarios to use for stress testing and strategic decision-making purposes. Like the IEA, IHS Markit "back-casts" its net zero scenarios but relies on some action from sectors other than energy. In the IHS net zero scenarios, the commodity prices are higher than the NZE. From our view, this indicates that the loss of oil growth opportunities is not as stark and the profitability of future natural gas opportunities is noticeably higher than in our LRP base case.

We also considered the impact of the IEA APS and NZE pathways on our year-end 2022 proved reserves. Our analysis indicates that in the APS scenario, there is no impact. However, in the NZE scenario, we see a minor impact, but this is beyond the 2060 timeframe.

9 Interpolation was necessary for the IEA price projections, since the IEA only publishes decadal milestones. The carbon price has already been netted out of the commodity prices, and is therefore applied to our Scope 1 and Scope 2 equity emissions, and not to Scope 3.

Climate Risk Management

Identifying Climate Risks
Through our Enterprise Risk Management (ERM) process, as described in the Governance and Responsible Business Practices section (see page 90), 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. For example, Murphy participates in several external associations:

- We are members of the API, CAPP and NOIA. We are active in many committees of these associations, including the climate and ESG committees, as they work on addressing climate-related issues. As mentioned in the Climate Governance section (see page 27), in 2022, we assessed our climate change position with that of these associations and concluded that we are consistent.
- We joined **Ipieca**, a non-lobbying group, in 2019, and are members of several of its working groups, including Climate Change, Environment, Reporting and Water. Ipieca leads engagement with United Nations agencies on behalf of its membership and has an ongoing record of convening expert workshops to explore key climate-related issues, informing the industry and stakeholders.
- We have been a sponsor of the **Massachusetts Institute of Technology (MIT) Joint Program on the Science and Policy of Global Change** since 1998. The research conducted at MIT is valuable to government agencies, which aim to formulate efficient and effective policies, to industries that aim to create risk management strategies, and to other decision makers, who value a systemic view of the broad interactions inherent in global change.

Managing Climate Risks and Opportunities
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 and opportunities, including those related to climate change. Through our ERM process, we have identified the following key climate-related transition and physical risks that might impact our strategy, and are actively managing mitigation efforts.

Key Climate-Related Transition and Physical Risks
Our reporting in this section is guided by the TCFD framework and the references to climate risks and opportunities, including transition and physical risks, are intended to align with this framework. The terms used herein are intended to be consistent only with their meaning under the TCFD framework. The disclosure of the information does not represent our belief regarding the materiality of that information under the federal securities laws. For a discussion of information that is material to Murphy Oil, please see our filings with the SEC, including our Annual Reports on Form 10-K and Quarterly Reports on Form 10-Q.

Type	Risk Description	Potential Time Horizon	Potential Financial Impacts	Mitigation Strategies
Transition: Policy and Legal	Policies/regulations related to GHG emissions, climate change, reporting obligations, carbon pricing and exposure to litigation.	Short- and medium-term	Increased operating expenses Increased cost of capital Write-offs, asset impairment and early retirement of existing assets due to policy changes	Murphy has developed focus areas to streamline our approach: • Monitoring policy and regulatory proposals for specific risks to our business, by our Enterprise Risk Management, Government Affairs and Regulatory personnel. • 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. • Utilizing a process for evaluation and innovation, ensuring that our technical experts have access to the latest technological advancements and 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 Our Emissions Performance in this section (see page 20).

Time horizon definitions: short-term – one to three years; medium-term – four to eight years; long-term – beyond eight years

Type	Risk Description	Potential Time Horizon	Potential Financial Impacts	Mitigation Strategies
Transition: Market	Two key potential risks of the market transitioning away from fossil fuels and into lower-carbon emission sources 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. If consumers embrace less carbon-intensive sources, partly motivated by carbon pricing, demand could drop and significantly impact long-term net oil and natural gas prices.	Medium- to long-term	Decreased revenue from reduced prices/demand for oil and natural gas Increased cost of capital	There is a large range of uncertainty about future rates of change, and timing is unknown. 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 that our future investments are competitive in these various pathways. We use an analytical framework that includes scenario analysis to help us understand and manage this risk.
	Reserves Estimation – Carbon prices will impact calculations of future reserves.	Medium- to long-term	Write-offs, asset impairment and early retirement of existing assets Increased cost of capital	Our Risk, Reserves and Planning functions work collectively with management and the Board to understand the potential impact and maintain our capital discipline.
Transition: Reputation	Change in public sentiment for the fossil-fuel business could lead to negative sentiment of the industry, causing: • Investors and insurers to withdraw from the industry • Increased activism and legal challenges	Short-term and beyond	Increased cost of capital Increased insurance premiums Increased operating and overhead expenses Deferred revenue in the event of legal obstacles to operations Decreased revenue from reduced prices/demand for oil and natural gas	Per our Climate Change Position, we will communicate with transparency on our progress on climate efforts at least annually, through the publication of our Sustainability Report. We actively engage with our stakeholders regularly to share our strategy, goals and progress and to receive their feedback, as outlined in our Stakeholder Engagement section (see page 89).
Physical: Acute	Our US and international operations are exposed to different types of physical risks, such as tropical systems, floods and other forms of severe weather.	Short-term and beyond	Deferred revenue from deferred production Increased operating expenses Property damage, liability for third-party damage Increased insurance premiums Property damage to customer and supplier assets	We have robust safety protocols in place, and we maintain thorough emergency response and crisis management plans. As described in the Protecting Our People section (see page 59), 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 in 2017 after Hurricane Harvey and Winter Storm Uri in 2021.
Physical: Chronic	Shifts in precipitation patterns and variability in weather patterns could cause prolonged or excessive conditions related to heat, drought, rainfall, cold spells, wildfires, rising sea levels, etc.	Short-term and beyond	Deferred revenue from deferred production Increased operating expenses Property damage, liability for third-party damage Increased insurance premiums Property damage to customer and supplier assets	In addition to the mitigation strategies outlined above for Physical Acute Risks, we also monitor the condition of our assets and infrastructure, as discussed in the Asset Integrity and Process Safety section (see page 49). Our Water Management Strategy and Risk Management (see page 37) helps us mitigate risks and potential impacts related to freshwater scarcity. We continue to invest in infrastructure to reduce our dependence on fresh water and increase use of recycled water and other alternative sources. We also seek innovative solutions involving other operators and third-party services.

Time horizon definitions: short-term – one to three years; medium-term – four to eight years; long-term – beyond eight years

Key Climate-Related Opportunities

Our reporting in this section is guided by the TCFD framework and the references to climate risks and opportunities, including transition and physical risks, are intended to align with this framework. The terms used herein are intended to be consistent only with their meaning under the TCFD framework. The disclosure of the information does not represent our belief regarding the materiality of that information under the federal securities laws. For a discussion of information that is material to Murphy Oil, please see our filings with the SEC, including our Annual Reports on Form 10-K and Quarterly Reports on Form 10-Q.

Type	Opportunity Description	Potential Time Horizon	Potential Financial Impacts	Ongoing or Future Initiatives
Resource Efficiency	Improved methane capture.	Short-term	Increased revenue	Continue with our efforts to reduce methane (see page 22).
Energy Source	Use of lower-emission sources of energy and new technologies.	Short- and medium-term	Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon Increased capital availability (as more investors favor lower-emissions producers) Reputational benefits resulting in increased demand for goods	Fulfill our commitments to The Environmental Partnership, as well as identify electrification, renewables (like solar and hydrogen) and infrastructure opportunities throughout our operations, as discussed in Improving Our Emissions Performance (see page 20). Evaluate and implement 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. Continue to evaluate low carbon energy and CO_2 mitigation opportunities like geothermal and renewable energy sources, as highlighted on page 26.
Products, Services and Markets	Natural gas as lower-emissions fuel. Development of natural gas markets with carbon capture for power generation. Development of natural gas markets with carbon capture for blue hydrogen production. Entering the carbon value chain as a storer in enhanced oil recovery.	Long-term	Increased revenue Increased capital availability (as more investors favor lower-emissions producers) Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon	Use our natural gas assets in Canada as a low-intensity resource. Allocate capital to investments in resources that will remain economically attractive under various transition pathways.

Time horizon definitions: short-term – one to three years; medium-term – four to eight years; long-term – beyond eight years

Climate Metrics and Targets

We use a range of metrics to assess our climate and emissions efforts and performance, including absolute and intensity metrics for Scope 1 and 2 GHG emissions, Scope 3 GHG emissions, methane, flaring, air quality, water and waste management. We also track and report metrics recommended by SASB for oil and natural gas exploration and production companies (see page 109 for our SASB index) and GRI (see page 116 for our GRI index). For a full list of metrics and data over the preceding five years, see Performance Data section (page 97).

Short-Term[10] Metrics and Targets

In 2021, the Compensation Committee of our Board added an annual GHG emissions intensity goal as a performance metric in our Company's annual incentive plan. The target metric for 2022 was set to ensure we remain on the path to achieving our medium-term goal of reducing our gross operationally controlled GHG emissions intensity. The annual incentive plan also includes safety and spill performance metrics, which we incorporated several years ago. The weighting of these three ESG metrics to the plan is 20%. We met our 2022 target range for these metrics, as outlined in the **2023 Proxy Statement**.

We also track our annual spend deployed toward climate-related risks and opportunities. For example, this includes our emissions reduction and water risk management spend, as highlighted in this report (see page 20 and page 37 respectively).

Medium-Term[10] Metrics and Targets

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. As discussed in Improving Our Emissions Performance (see page 20), our performance in 2022 puts us on a clear path to achieving our 2030 targets. Our GHG emissions intensity decreased by about 25% from 2019 to 2022. We are also on track to achieve zero routine flaring by 2030.

Long-Term[10] Metrics and Targets

We also use a set of metrics to measure strategic risks and opportunities from climate change and the related energy transition. These include the emissions measures mentioned above. We view Scope 1 and 2 GHG emissions intensity as an indicator of cost risk in relation to carbon pricing regimes. We view Scope 3 GHG emissions intensity as an indicator of revenue risk in relation to declining oil and natural gas prices that could result from carbon pricing and competition from non-emitting sources of energy. When we test the effects of energy transition scenarios, we look at several metrics to evaluate the resilience of our portfolio. These include the Net Asset Value (NAV) of the portfolio, the impact of internal carbon price, the evolution of corporate debt in the scenarios, and the percentage reduction in reserves under various scenarios.

External Assurance

We are committed to reducing emissions and progressing toward our emissions intensity goal. To ensure the integrity of our emissions data, for a third consecutive year, we have engaged ERM Certification and Verification Services (ERM CVS) to conduct an independent limited assurance on our absolute Scope 1 and 2 GHG emissions. For ERM CVS's Independent Assurance Statement see page 107.

10 Time horizon definitions: short-term – one to three years; medium-term – four to eight years; long-term – beyond eight years.

Water Management

Water is essential to our communities, ecosystems and industry. Murphy is committed, from the Board, President and Chief Executive Officer, and other senior management to field personnel, to responsible water management practices, stewardship and conservation in all areas where we operate. We strive to be a leader in water management planning and practices, with the ultimate objective of reducing the withdrawal and use of fresh water in our operations.

The availability of fresh water is being affected by human consumption, farming and industry water users, and climate shifts. We integrate water scarcity into our regular risk assessments and our business strategies. From the initiation of our onshore operations in 2009 to the end of 2022, Murphy has invested an estimated $44 million in infrastructure to minimize our dependence on fresh water and maximize our use of recycled produced and flowback water and other alternative sources. In the last five years alone, from 2018 to 2022, this investment was about $31 million.

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 policy and strategy that addresses planning and forecasting, water sourcing, treatment, storage, recovery and recycling, permitting and optimization. In 2022, Murphy did not have any incidents of non-compliance associated with applicable water permits, regulations or standards.

Water Management Policy

Our onshore Water Management Policy outlines our commitment to reduce consumption of fresh water and conduct responsible water management practices. Our policy focuses on:

- Reducing our impact and demand on the local freshwater sources
- Complying with regulations and standards
- Protecting the environment and the diversity of plant and animal life while minimizing the impact of our operations
- Deploying new treatment technologies to our water management process
- Continually expanding our water infrastructure network
- Tracking and reporting water metrics to drive transparency, learnings, optimization and future planning

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 4,000 mg/L TDS.
- In British Columbia, the British Columbia Energy Regulator (BCER) defines fresh water as non-saline water less than or equal to 4,000 mg/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 consumption, 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 (initial produced water for a defined period).

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

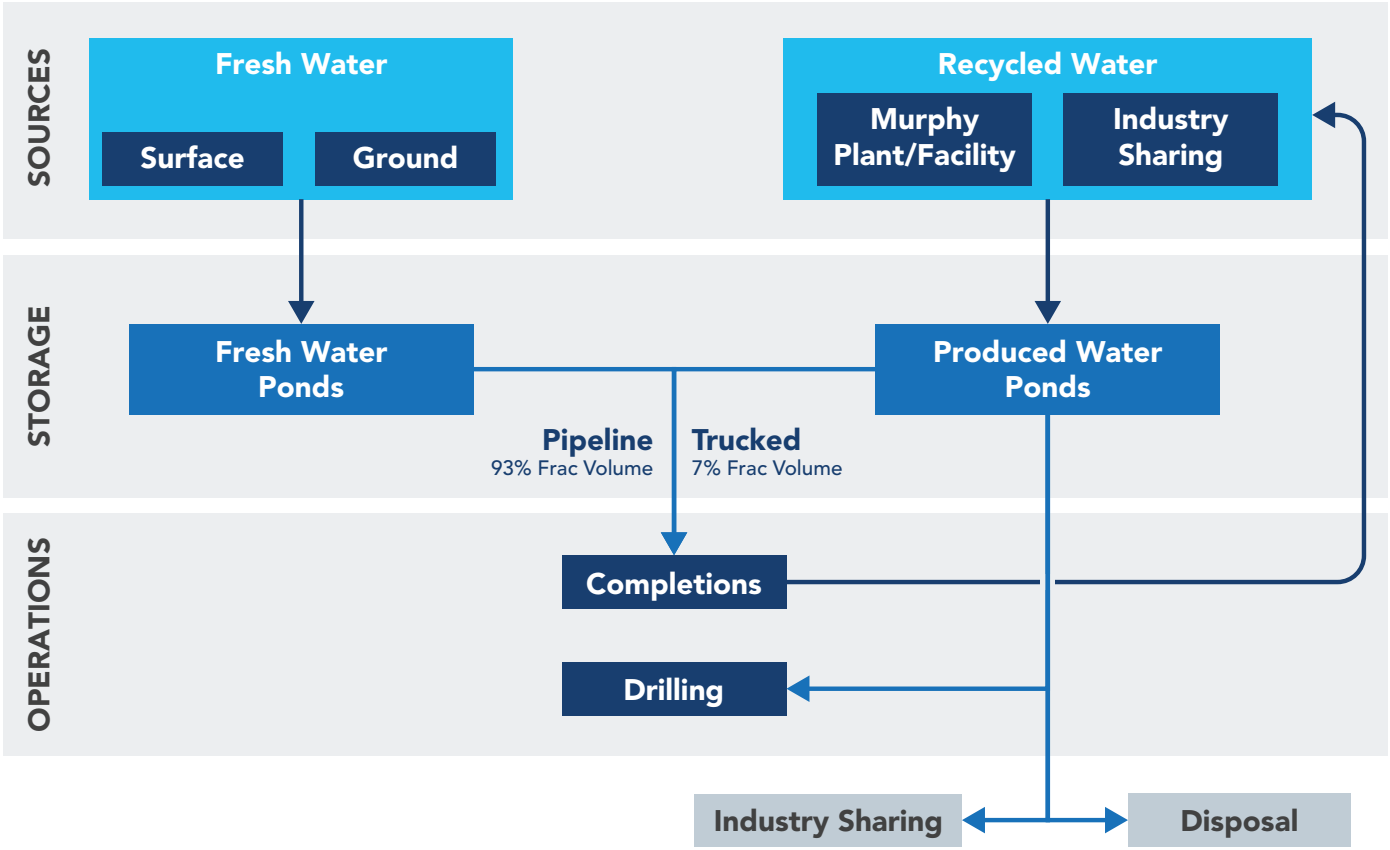
Water Management Strategy and Risk Management
Our water management strategy provides the philosophy and framework for how we identify and manage short-term and long-term needs, develop solutions and optimize our programs. Our Vice President, Drilling and Completions, is responsible for the overall water management for the Company. We undertake comprehensive planning to ensure adequate volumes and quality of source water are available when required, with the goal of maximizing water recycling, improving efficient water use and lowering costs. This planning includes managing, storing, treating and transporting produced water.

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 freshwater use, preferences of area stakeholders, regional regulations, water stress, physical characteristics as well as economic and technical feasibility.

Mitigating risks and potential impacts to water resources is a key component of Murphy's water management strategy. Our Water Management team, led by our Staff Water Management Technologist, works closely with the Operations and the Regulatory teams to integrate water-related risks into our operations risk assessments and business strategy and develop mitigative measures. Water challenges and risks can include:

- Access to alternative water and freshwater sources
- Water treatment options
- Storage and conveyance opportunities
- Water forecasting
- Understanding of development plans, seasonality factors, high water stress areas and lead times
- Understanding of flowback and produced water rates
- Disposal options, when required

Murphy Onshore Operations Water Use Life Cycle



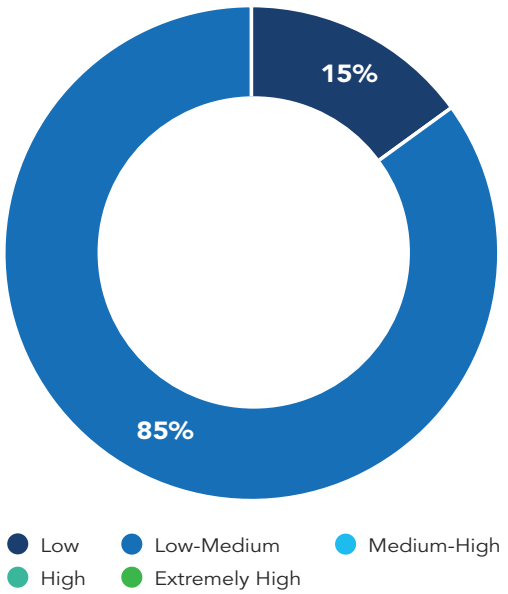
Water Sourcing
Whenever possible, we seek to use alternative, non-freshwater sources, including flowback and produced water, saline groundwater and effluent wastewater. We continue to invest in and expand infrastructure and management capabilities to maximize our use of flowback and produced water, a primary element of our efforts to reduce freshwater use.

To further expand our use of produced water instead of freshwater, we worked with water disposal vendors to develop an agreement for us to use third-party produced water that would otherwise be sent to a disposal well, resulting in reduced need for fresh water. We started accepting produced water from two vendors to pre-fill ponds at year-end 2022, prior to our first-quarter 2023 completions activities. These vendors have pipeline connections to our ponds and facilities. The produced water was treated to remove suspended solids and iron prior to pumping it to the pond. We are also in discussions with local city districts to use effluent water and have had success with produced water sharing opportunities with other operators in and around our operating areas.

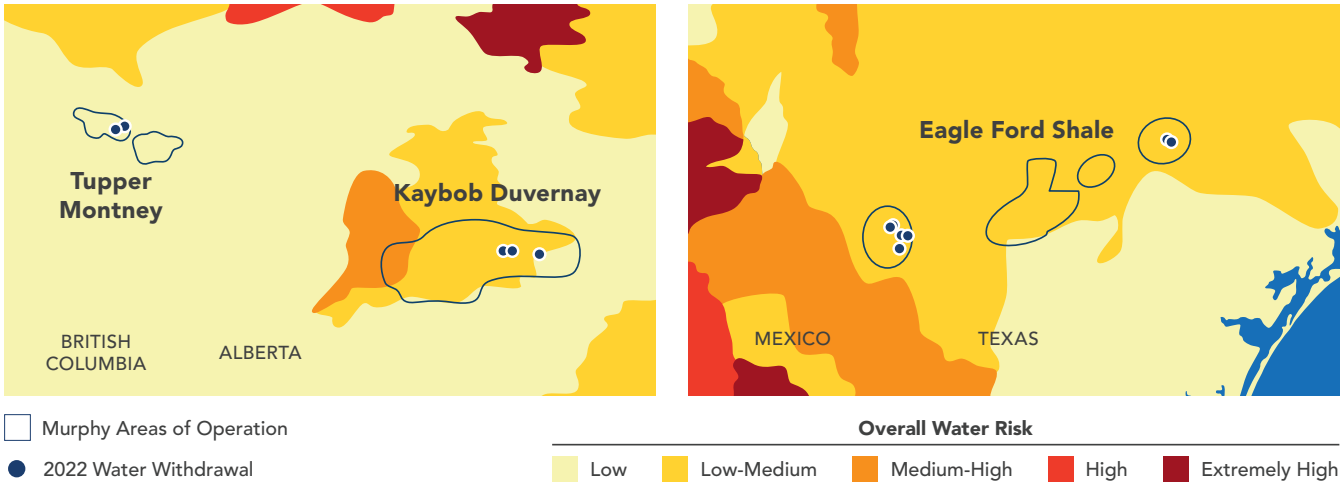
When we have exhausted or are not able to use alternative water sources, and freshwater sources are required, we strive to avoid impacts on wetlands, streams, ponds and lakes, waters of the US (WOUS) or US Army Corps of Engineers (USACE) water bodies, as well as areas with higher water scarcity and wildlife biodiversity.

We use the World Resource Institute's Aqueduct Water Risk Atlas tool to determine baseline overall water risk levels to aid in decision-making processes. In 2022, none of the fresh water we sourced was from areas of medium-high, high or extremely high water stress. While there are shifts season to season, when considered on an annual basis, in 2022, 15% of our fresh water withdrawals were sourced from low-water-risk regions, as defined by the Aqueduct Water Risk Atlas. The remaining 85% of the water was sourced from areas with low-medium water risk, which are mainly in the Eagle Ford Shale. This analysis is illustrated in the chart and maps below. We have constructed and plan to construct produced water ponds in these low-medium areas to further reduce our freshwater consumption.

2022 Overall Water Risk[11] Analysis



Water Risk Maps[12]



11 As defined in the World Resource Institute's Aqueduct Water Risk Atlas tool.
12 Source: World Resource Institute's Aqueduct Water Risk Atlas tool and Murphy internal.

Before any fresh water can be withdrawn and used for our operations, including when we may be near or within critical habitat or high biodiversity value areas, we 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 when required for water permit applications. We also conduct other precautionary measures as required, such as adhering to riparian habitat and wildlife setbacks and timelines.

Water Management Networks
Water management networks allow us to strategically withdraw and impound water volumes necessary to support operational activities. These networks include ponds (freshwater and produced water), pipelines and facilities such as tanks and filters.

In the **Eagle Ford Shale**, Texas, a hybrid reservoir infrastructure network, with more than 40 fresh/produced water reservoirs, allows us to store water in preparation for future operations, and serves to capture water from frac flowback and production operations once wells are online. We also have an above-ground pipeline system and access to groundwater wells and surface water in our key areas of operation. In 2022, we continued to invest capital to optimize our facilities and produced water ponds, allowing us to store — and ultimately reuse — larger volumes of produced water rather than trucking the water off to disposal. Murphy plans to construct a new pond annually to increase the recycled volumes, reduce dependence on fresh water, and save costs.

In the **Tupper Montney**, Canada, we operate two discrete water infrastructure networks, a 472,000 BBL produced water pond and a 1.25 MMBBL freshwater pond. Approximately 59 miles of water pipeline supports the produced water 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. With the addition of a second pond in 2022 (see case study right), 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, a remote area posing unique logistical and regulatory challenges, Murphy invested in a 22-mile freshwater pipeline and reservoir infrastructure in 2019 and 2020. This infrastructure reduces trucking activities and environmental disturbances across the Kaybob East and Two Creeks fields and 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.

DON'T SETTLE FOR "GOOD ENOUGH"

Increasing Tupper Montney Produced Water Storage Capacity

Since installing our 472,000 BBL produced water pond and associated pipeline gathering network in Tupper Montney, we have exceeded our water reuse expectations. In total, this infrastructure has supported 34 well completions with 3.6 MMBBL of recycled produced water, eliminating the need to dispose of that water. This amount of recycled produced water has also directly offset freshwater volumes sourced from the local environment that would have been needed.

Leveraging this success, Murphy sanctioned the design and construction of a second complementary 472,000 BBL produced water storage facility adjacent to the first pond. When it comes online in late 2023, this second pond will further increase the recycling rate across future completions programs and reduce disposal costs for the Tupper Montney asset.

Installing this produced water storage capacity is a testament to our commitment to freshwater conservation and responsible water management practices.

Produced Water Pond and Facility in Tupper Montney

Predicting High-flow Periods in Canada

In Kaybob Duvernay, Alberta, and Tupper Montney, British Columbia, we withdraw and impound water volumes for operations during water-rich or high-water flow during spring, when streams rise and have higher flow rates as a result of snowmelt. Withdrawing the fresh water required during the high-flow periods reduces the chance of negatively affecting the environmental flow needs of downstream aquatic ecosystems, maintains available free water allocation for other local area water users and decreases the need to withdraw water at times of stress or drought where access to water may be restricted.

Murphy actively monitors our freshwater sources with automated lake hydrometric stations and river monitoring aids, both of which help us predict the high-flow periods for long- and short-term forecasting. Fluctuations in moisture levels year-over-year, and the potential impacts of climate change on water resources, make it increasingly necessary to understand the impact on freshwater availability.

Automated lake hydrometric stations record water level, oxygen saturation and water temperature. These stations are monitored electronically, which ensures data integrity and makes data analysis more efficient.

Additionally, rivers and streams are monitored by a third party to assess fish habitat, fish-screen sizing and placement and river flow conditions. They also monitor flow rates weekly to bi-weekly while withdrawing, to ensure compliance.

In the future, we expect to expand the scope of the program to include local and regional precipitation and snowpack, which will provide data trends to predict possible drought or high moisture levels.

Onshore Water Management App to Support Water Operations

We continue to evolve and enhance the water management software application that we first developed for our Tupper Montney asset in 2019. Today, the app supports our entire onshore water operations in the US and Canada with real-time monitoring, reporting and alerts. Features include:

- Tracking of produced water pond leak detection volumes
- Tracking of daily and monthly water pond volume, composition and inspections
- The ability to perform data analytics
- Calculating the ratio of produced water to freshwater consumption for each well
- Providing an auditable data trail and automated reporting

With better data reporting, analysis and sharing capabilities, we have realized the following benefits:

- Early detection of potential leaks from produced water ponds
- Quicker, easier integration of water management considerations into operational decisions
- Improved planning and forecasting, leading to cost reductions
- Increased produced water recycling and lowered disposal
- Enhanced reporting capability

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, water compatibility, 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.

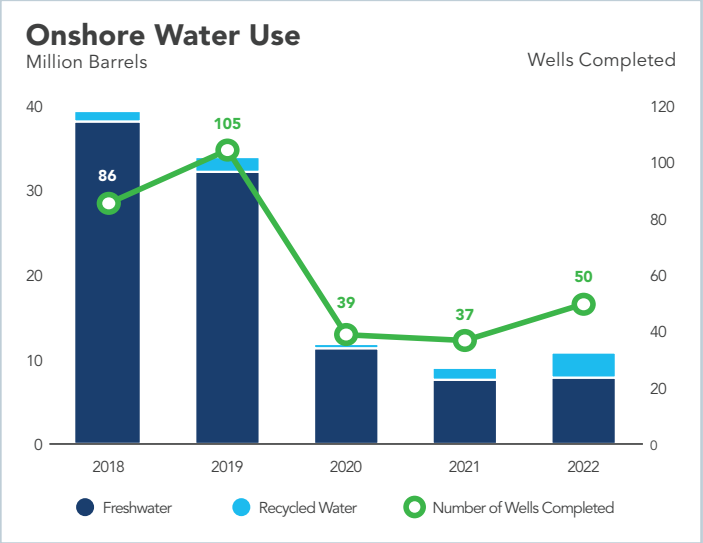
In 2022, we completed a total of 50 wells, 27 in Eagle Ford Shale, 20 in Tupper Montney and three wells in Kaybob Duvernay. We have increased the percentage of recycled water to total water consumed in our operations from 4% in 2020 to 17% in 2021, to 27% in 2022, which is the highest recycling ratio in our Company's history. The flowback and produced water generated that was recycled was 31% in 2022, compared to 14% in 2021. When including produced water shared with nearby operators, we recycled 38% of the total flowback and produced water. We have also improved our total water use efficiency. Year-on-year, we have continued to lower our average water use per stage across our North America operations, while maintaining or improving well performance.

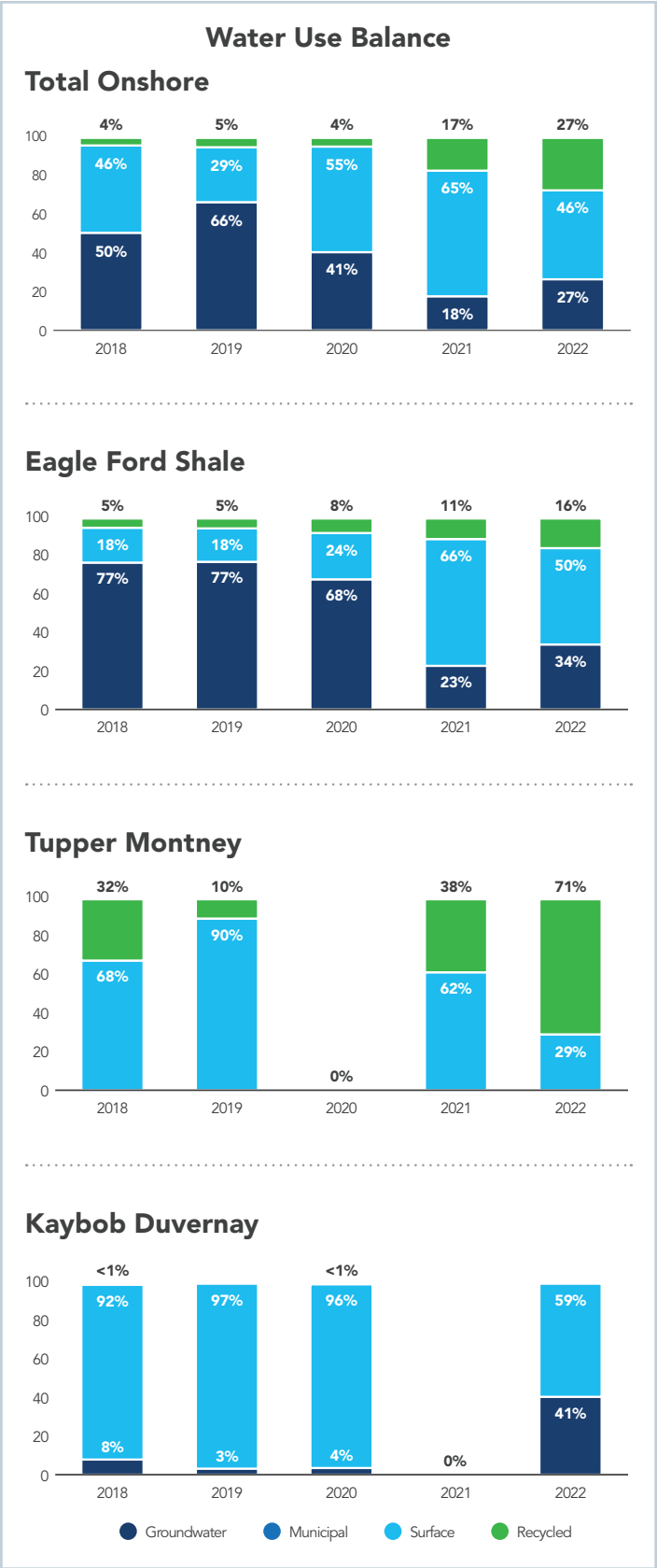
We continue to explore opportunities to increase our recycling ratio. For example, our internally developed water management software application enables us to monitor, analyze and forecast our water needs.

In the **Eagle Ford Shale**, over the last several years, we have increased our capital investment to improve water recycling rates. Consequently, the percentage of water we sourced from recycled water increased to 16% in 2022 from 11% in 2021. In 2022, we also shared a total of 60,000 BBLs of produced water with nearby operators, and we plan to continue this responsible water recycling practice in the future. Our use of surface water decreased from the prior year because our operations were in areas with little to no surface water, thus requiring increased use of groundwater.

In **Tupper Montney**, we have continued to increase produced water recycling in our completions operations. In 2022, we set new all-time records for recycled volumes and reductions in freshwater usage intensity since development of the asset. Our produced water use was 71% in 2022 as compared to 38% in 2021. Since 2019, our recycled water volumes have increased almost 15-fold.

In **Kaybob Duvernay**, we are in the early stages of field development. In addition to the infrastructure discussed in the Water Management Networks section (see page 40), we are working with nearby operators in the area to share freshwater ponds and pipeline infrastructure. Arrangements like these benefit both parties by lowering costs and providing reliable access to fresh water, while also significantly reducing the potential environmental impacts of multiple infrastructure developments. We plan to continue to work with multiple operators in the area in the future.





STEP UP AND LEAD

Creative Solutions Benefiting Stakeholders

Murphy's 2022 development program included the completion and facility tie-in of 10 wells at a multi-wellpad in Tupper West. As part of this work, we sought permits for pipelines used to transport water to and from the project. Though we made our best efforts to work with the local regulator and provincial government, it was not possible to have our water pipeline permits, along with most other oil and natural gas industry permits of all types for all operators, approved in time.

Without pipeline support, we needed an alternative approach to transport recycled produced water from Murphy's hub to the completion well pad. Using trucks to transport this water would have required an approximately 26-kilometer round-trip drive on local roads through a densely populated area with a minimum of 35 directly affected landowners and residents along the transportation corridor.

Murphy's technical experts did not settle for the fallback option of trucking as a viable alternative. Instead, a multi-disciplinary project team was formed, which engineered a successful solution; temporarily shutting in natural gas flow and reversing a portion of Murphy's existing natural gas pipeline system to facilitate water transport, enabling the 10-well completion to proceed on time and on budget.

The solution eliminated approximately 9,000 tanker truck round trips, between the wellpad and hub, the equivalent of 234,000 kilometers driven, and eliminated 293 metric tons CO_2e of associated GHG emissions. This approach also avoided the safety concerns and reputational risk of impacting local landowners and residents along the trucking route, including a main highway frequented by school buses, and saved approximately $1.75 million in road maintenance and cleanup costs.

EMBRACE NEW OPPORTUNITIES

Using Recycled Water Beyond Completions Operations at Tupper Montney

Over the end of 2021 and early 2022, we piloted the recycling of produced water as a viable base drilling fluid, replacing calcium chloride brine, for the Tupper Montney drilling operations This brine has been the recent industry standard used in drilling operations by most operators in the area, including Murphy. Produced water has similar properties to the brine, but by using produced water, we will increase produced water recycling and lower costs associated with purchasing and transporting brine.

The pilot was a commercial and technical success. Following the success of the pilot, we continued implementing produced water as the base fluid in drilling operations in Tupper West and Tupper Main, for a total of 16 wells, over the end of 2022 to mid-2023. Moreover, we collaborated with our drilling fluid service provider to further increase the technical properties of the produced water by piloting a viscosifying additive that can improve rheology, increase maximum density and enhance lubricity. We plan to implement this approach in future drilling operations as standard procedure, where possible.

Groundwater Quality

Rigorous protection of groundwater quality is an important element of our approach to water management. Murphy monitors groundwater in and around our Tupper Montney saline pond in accordance with regulatory requirements. We have installed groundwater monitoring wells around the perimeter of the pond and take water samples quarterly. The water is analyzed against the baseline samples to ensure there have been no changes in the quality of the groundwater.

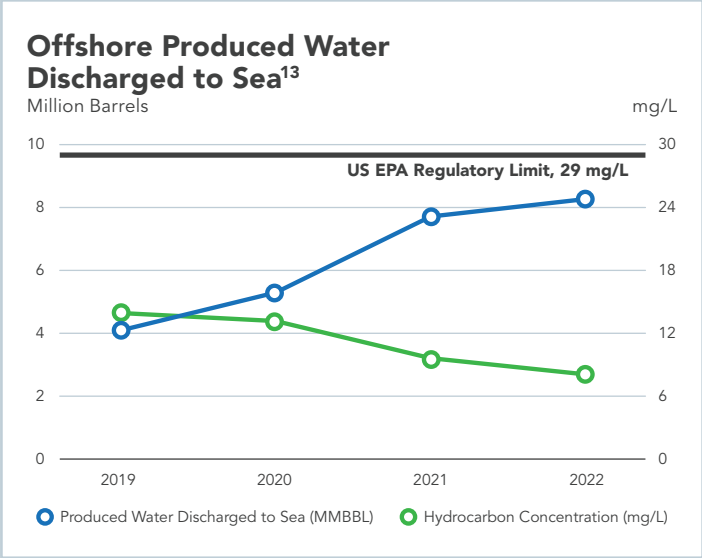
Though it is not a regulatory requirement to actively monitor groundwater quality in connection with hydraulic fracturing, we proactively sample landowners' groundwater wells prior to completions if the water wells are within proximity to the pad being completed. These baseline samples prior to the completion are sent for analysis and stored for future reference and analysis.

Offshore

Our Gulf of Mexico business does not use fresh water but instead primarily uses seawater for oil and natural gas production. Water uses are for functions typical to marine environments, including ballast systems, machinery and process cooling and potable water generation. Seawater used for the process is treated using metal ions (copper/aluminum) to preserve facility piping and equipment. De-ionized water is used for closed-loop heating circuits, to minimize integrity concerns and use of alternative chemicals.

Potable water for hygiene and galley use is generated through reverse osmosis, and returned to the sea. This wastewater is treated by marine sanitation devices or chlorine applications before discharge, with regular testing to ensure it has no impact on aquatic environments and is in compliance with federal regulations.

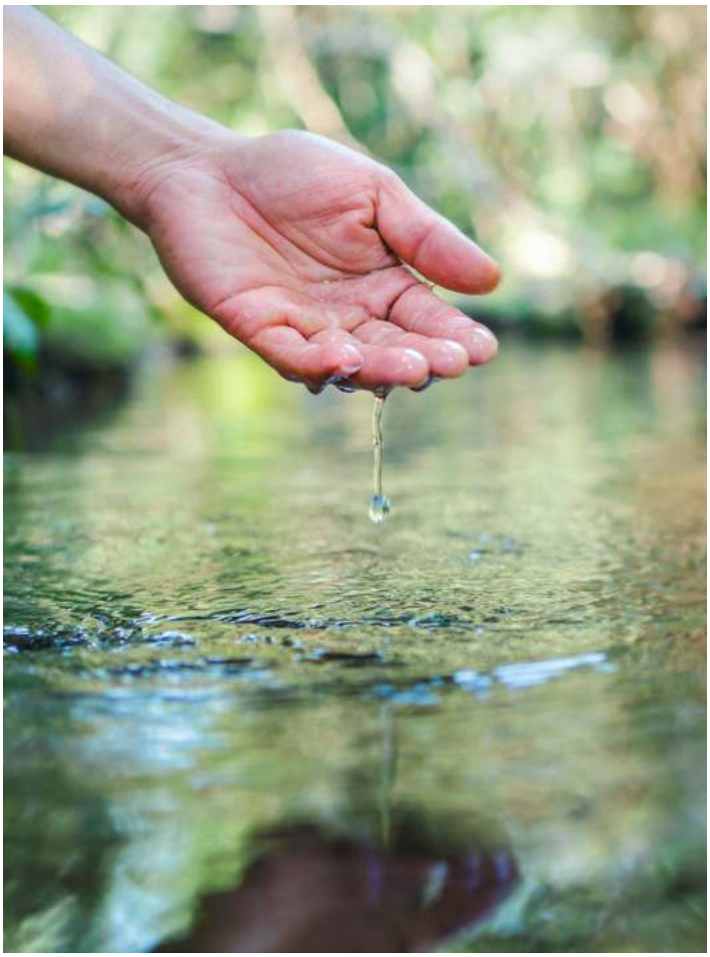
For all discharged water offshore on Murphy facilities, we fully comply with the National Pollutant Discharge Elimination System (NPDES), managed and regulated by the EPA. All produced water discharge tests in 2022 passed the required toxicity and oil and grease concentrations (see chart on right). The increase in produced water discharged in 2021 and 2022 is primarily due to the increase in production.



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, Ipieca Water Working 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 on key water issues, including responsible development through water sharing, alternative non-freshwater source research and development, infrastructure sharing and discussions on best operating practices.



13 Hydrocarbon Concentration US EPA regulatory limit is 29 mg/L.

Biodiversity Protection

As stewards of the environment, we seek to understand and mitigate nature-related risks and impacts. We have identified water use as a priority nature related dependency and actively manage potential risks and impacts. See the Water Management section (page 37) for a detailed discussion on our freshwater dependencies, and risk assessment and management.

We also work to minimize our impacts on biodiversity and local ecosystems. We are committed to protecting biodiversity and avoiding nature loss at various stages of project lifecycles. From planning through execution and on to project decommissioning, all teams collaborate to minimize project footprint and impacts to local biodiversity.

We comply with all local biodiversity laws and regulations in the areas where we operate, and we currently operate in areas with very stringent biodiversity regulations. We refrain from operating in protected areas such as those designated by United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage, the Ramsar Convention on Wetlands and the US Fish and Wildlife Service.

By SASB definitions, less than 1% of our proved reserves are in or near sites with protected conservation status or endangered species habitat. In these High Conservation Value areas where we operate, we follow all rules and regulations as defined by local, state and federal regulations.

Our HSE Department is responsible for the oversight and management of biodiversity and site impact assessments for both our offshore and onshore operations. As relevant to their work, employees are trained on environmental and nature-related protection, including biodiversity and cultural/heritage sensitivities as defined by the International Union for the Conservation of Nature (IUCN) and other international conservation groups.

Lifecycle Approach to Biodiversity Protection

Our overall approach to biodiversity protection and nature loss avoidance – which is aligned with the mitigation hierarchy – is summarized below:

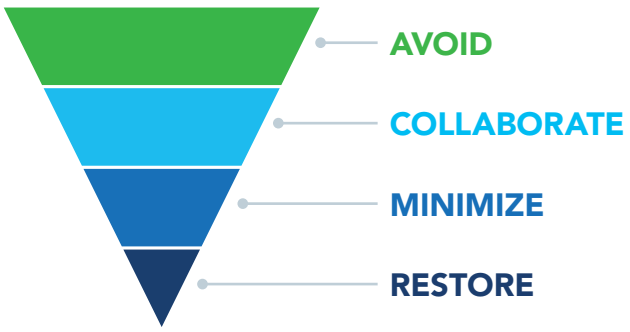
- **Avoid** – In pre-operations assessments, we evaluate potential impacts and plan for mitigative action.
- **Collaborate** – When possible, we consider impacts outside Murphy operations by peer and nearby operators and jointly plan actions with those operators to reduce areas of impact.
- **Minimize** – When impacts cannot be avoided, we design our activities to minimize nature-related risk and avoid nature loss.
- **Restore** – We work diligently to remediate an area so that it is brought back to its original condition as reasonably as practical.

A more detailed description of our approach at various stages of operations is outlined below.

Pre-Operations Assessments and Mitigation Planning

- Internal review of targeted surface disturbance, which includes consideration of potential cumulative impacts outside our operations, including peer operators' impacts, and determination if collaboration is possible to reduce the impacts to the area.
- Pre-disturbance biodiversity analyses are conducted by experts from multiple disciplines, to ensure potential environmental, ecological and archaeological impacts are assessed and addressed.
- Project areas are demarcated in mapping databases for use by industry. Mapped project areas are cross-referenced against public databases of biodiversity and cultural information to create a Regulatory Site Assessment (RSA), which determines if any state, provincial or federal government-established areas of High Conservation Value of concern exist in the proposed project area.
- Once this public information is processed, an Environmental Site Assessment (ESA) is drafted 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 in the public data.
- The RSA and ESA identify areas of concern and include a mitigation plan to avoid, minimize or mitigate impacts. 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, and relocating projects when mitigation efforts are not possible.
- For offshore operations, the HSE Regulatory team identifies critical habitats, known as Marine Protected Areas, and includes them on the no-activity zone watch list. In addition to the Marine Protected Areas, planned oil and natural gas projects undertake extensive Archaeological and Geohazard (A&G) assessments prior to the design and installation of any subsea equipment and facilities for oil and natural gas development. These assessments are used to plan infrastructure layouts, to avoid any sensitive areas identified.

Our Mitigation Hierarchy
In Order of Decreasing Preference



Operations

- Prior to the construction of a project, locations are screened for wildlife presence. If wildlife is detected, a local expert is brought to the location to properly identify the wildlife species and indicate the proper nature loss mitigation methods. These methods generally focus on avoidance of the area entirely until nesting, mating or hibernation periods have concluded.
- Once a project footprint has been reviewed and screened for wildlife presence, project construction may commence. We continue to surveil surrounding wildlife from the beginning stages of construction until a project is closed and/or decommissioned, to help keep wildlife disturbance to a minimum, while protecting the safety of field employees.
- While conducting operations, the project footprint is continuously monitored for any impacts that are not intended or outside project scope. Should impacts be identified, the impacts are handled pursuant to site closure procedures rooted in local, state and federal law.
- Wellpad sites and pipelines are built with containment berms and erosion protection, to contain materials on-site and create a buffer between our operations and contiguous lands.
- If a site becomes saturated by either rain or snowfall, run-off liquids are tested on-site before they are allowed to drain off-site through pre-installed drainage, which is plumbed through the berm, thus avoiding potential contamination from run-off.

Site Closure, Decommissioning and Restoration

- For all projects, we conduct extensive sampling and testing of the soil to establish its condition prior to making any impact. We catalogue the samples for each site and review them upon site closure to help us restore each site to its original condition, as reasonably practical.
- The HSE department, led by its Vice President, Health, Safety and Environmental, 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.
- At the end of every project, the HSE team implements a decommissioning, remediation and restoration standard, which is part of the Murphy HSE Management System (see page 61) and our policies.
- Remediation goals include a commitment to rehabilitate land to minimize negative impacts and maximize benefits, community involvement in closure planning, reporting on closure plan implementation and site rehabilitation, and to implement measures to address or avoid significant environmental or landscape impacts.
- Along with remediation procedures for each impacted site, there is an annual review to ensure sufficient funds are in place to cover closure and rehabilitation for all operational areas.

Our Regulatory, Environment and Surface Land departments maintain a lifecycle management program that includes ongoing development and review of annual site closure and land rehabilitation activities. Depending on the jurisdiction of operation, Murphy executes these activities in accordance with a "timeliness to closure" mandate. This helps to ensure that older, inactive assets are managed within a reasonable timeframe, or in accordance with an "inventory reduction program" that necessitates adherence to regulated annual closure spend targets based on our proportion of the immediate jurisdiction's total oil and natural gas calculated liability. We also consider seasonality and stakeholder timing requirements and preferences and time certain elements of our closure and rehabilitation work to reduce seasonal impacts and to operate between the phases of crop management.

Through an at minimum bi-annual priority risk-ranking exercise, specific closure and rehabilitation activities are chosen, based on one or more of the following:

- Regulatory and stakeholder drivers
- Seasonality constraints
- Limited cost/scope needed to achieve closure
- Legacy liability age
- Technical review stage
- Known or suspected impacts
- Batch investigative work, limited site knowledge available
- Required additional assessment work

Part of our lifecycle management program is monitoring the rate of closure activities with respect to spending and pace of inactive liability growth. HSE personnel work collaboratively with Exploitation, Completions, Production and Reservoir teams to assess if, instead of being decommissioned, older inactive assets could, be brought back online to create extra value for the Company and/or be used as potential surface locations for future multi-wellpad drilling, reducing the need for future surface disturbance.

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 communities, municipalities and regional districts of all closure plans. Additionally, we abide by government consultation requirements with Indigenous communities when seeking permit approvals in British Columbia and Alberta. When local issues arise, we seek a resolution that weaves community concerns into Murphy's Project Reclamation and Closure Strategy. 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.

Biodiversity Concern Reporting

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 surface landman whom they can call for any issue. The landman is responsible for ultimate issue resolution.

Grizzly bears are listed as a Species of Special Concern in Canada. If an active grizzly bear den site is discovered, Murphy avoids proceeding with any activity within 750 meters of the den.

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 (see page 61), 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 & 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 AIP to focus on our overall hydrocarbon spill volumes rather than just the number of events. Based upon a review of peer data, we set our target to drive for favorable performance relative to the industry as a whole. For the past three years, we have met our AIP target range.

Thanks to the efforts of our employees, contractors and those performing work at Murphy operations, our hydrocarbon spill rate was zero BBL spilled per MMBOE produced for 2022, substantially below our target of 2.6 BBL per MMBOE and better than the IOGP North America 2021 benchmark of 1.47 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.

More notably, Murphy has not had an offshore spill greater than 1 BBL since 2003. We remain vigilant to minimize risk across our operations.

Meeting AIP Target Range
IOGP Spill Rate Metric

2020	2021	2022
✓	✓	✓

0
Offshore Spills Over 1 Barrel Since 2003

4
Years Running Outperforming IOGP North America Industry Average Spill Rate

0
Barrels IOGP Spills per MMBOE Produced, Surpassing 2022 Spill Target

Asset Integrity and Process Safety

Asset integrity and process safety are central elements of our HSE Management System (see page 61). Our Global Asset Integrity and Reliability team continues to focus its priorities to de-risk our assets through implementation of our detailed Asset Integrity Management Programs.

Asset Integrity

Asset Integrity is an engineering discipline managed within the Global Engineering department, headed by the General Manager of Engineering. The team is structured as an international team providing global operational support for our integrity management programs. We plan for and evaluate the integrity of our assets throughout the life cycle, from design, construction and operations to abandonment. Personnel, certified to international standards such as the API 510 – Pressure Vessel Inspector, API 570 – Piping Inspector and National Board Pressure Equipment Inspectors, help execute our programs and perform field inspections. Data from these inspections is analyzed by integrity engineers.

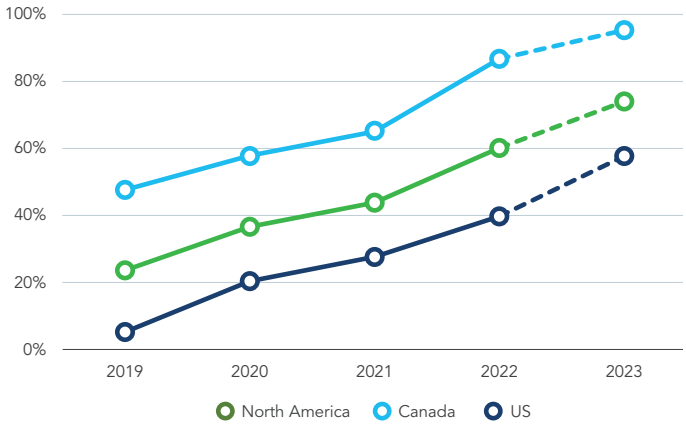
Each asset has created integrity management programs that detail requirements for the management and review of pressure equipment, pressure piping, pipelines, and structural and subsea integrity. In many cases, our requirements exceed regulatory requirements. The effectiveness of our approach is illustrated by the results of third-party and regulatory audits of our programs. Regulatory audits in Canada have received grades consistently above 90% on our asset integrity management programs since 2018. Our US onshore assets were also audited in 2022 through the Texas Railroad Commission Pipeline Safety Division under PIPES Act Sec. 114, where Murphy passed without any additional follow-up or oversight activities being required.

We emphasize risk-based inspections and an anomaly management approach, to optimize resource deployment. We implement digital information systems to improve awareness of risk and the evaluation of inspection and anomaly data across our operations. Through these assessments, we identify areas of higher risk and are able to run targeted projects to mitigate risks. These projects include construction activities as well as improved maintenance programs, such as optimized pigging programs, in-line inspections (ILI), verification digs, coating programs, chemical programs and coupon programs.

Enhanced ILI Lead to Fewer Environmental and Safety Incidents

In the last five years, we have enhanced ILIs of our North America onshore pipeline systems. We use the results from these ILIs to support continuous improvement of our integrity programs, with the aim of responding more effectively to the dynamic nature of our operations. By year-end 2023, we plan to complete baseline ILIs for 74% of our total North America pipeline systems onshore. Locations are determined through risk assessment, and priority is given to those with higher risk.

North America Onshore Annual Baseline ILI Progress



In the offshore business unit, we have a structured risk and condition-based integrity program with effective results, covering inspection, monitoring and anomaly management strategy for five main safety critical systems. For example, in 2022, our topsides integrity program tagged and proactively corrected 682 corrosion anomalies, ranging from spool replacement to coating management, to prevent potential loss of containment and unplanned shut-in through our asset integrity program.

We continue to implement innovative technology solutions to improve the efficiency of our asset integrity program, helping us reduce risk to people and optimize resources. For example, over the past few years, we have improved our ability to capture and analyze data from field inspections within our Integrity management software and improved integration with other systems. See the case study on the right for an example of this work in our offshore facilities.

We regularly monitor asset integrity factors for other equipment, including pressure piping, pressure equipment, offshore handrails, grating, riser and structural integrity, through visual assessment, thickness measurement programs and anomaly repair strategies. 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, reliability and facilities engineering, to support continuous improvement of our integrity programs.

In addition to conducting inspections on defined schedules, we also evaluate our systems for abnormal conditions in real time. The Remote Operations Center (ROC) continuously monitors our operations, beyond just pipelines, for changes in pressure, flow shutdowns or alarms, to dispatch operations personnel to intervene when necessary. In 2022, we introduced a new risk ranking to onshore well pads, through which they are evaluated and risk ranked based on safety, integrity and operational criticality. Equipment, pipelines and well pads with a higher risk rank and criticality are prioritized for ongoing maintenance, operator checks and inspections. When necessary, components are proactively replaced to avoid failure and loss of primary containment. This risk-ranked wellpad list is regularly updated according to physical changes in production, environment or inspection findings, to name a few.

THINK BEYOND POSSIBLE

Utilizing "Digital Twins" Offshore to Effectively and Efficiently Manage Risks

We work continuously to maximize use of the large quantity of data that is collected through our robust asset integrity management programs. For example, in our Gulf of Mexico operations, we have implemented a new approach to efficiently organize, view and analyze data to maximize the safety and efficiency of our operations.

Specifically, we performed 3D scans of our offshore platforms and integrated these scans with our asset integrity management systems to create digital twins, or a virtual replica of our offshore processing facilities, that are layered with asset integrity data.

These offshore digital twins are accessible by our personnel to view, analyze and implement operational changes and/or maintenance from anywhere, at any time. With the implementation of this technology, we have:

- Improved data processing time, traceability and accuracy, ensuring we act quicker on higher-risk items identified through thorough inspections.
- Created a digital space that has enhanced communication between the office personnel, offshore personnel and third-party service providers, ensuring everyone on the job is clear in what is being evaluated.
- Minimized personnel risk, by conducting visual inspection in office through a virtual platform.
- Reduced the number of offshore trips required for site measurement, since accurate measurements can be made within the system from the office. This also reduced personnel risk, as fewer people are needed to travel and be offshore.
- Improved work planning efficiency and effectiveness for inspection and anomaly management tasks.

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. This has included working to better understand and mitigate risks in our operations across all assets, modeling our program on API RP 754.

Process Safety Events (PSE) are tracked and ranked by severity, following guidance from API RP 754. Tier 1 through Tier 3 events are categorized as lagging indicators, which we log in our incident management database. We also track near-misses (Tier 4 events) as a leading indicator, which are summarized in data dashboards. All PSE Tier 1 and Tier 2 events are investigated for root cause, and we implement corrective actions to avoid repeat incidents. When multiple low-consequence and PSE Tier 3 events occur, we may perform root-cause analysis to identify potential underlying systemic issues that could result in higher-severity incidents. The data collected from the Process Safety efforts are reviewed in the HSE Steering Committee meetings with senior management and also reviewed in field-level safety meetings.

A key pillar of our Process Safety approach is working to ensure that we understand the hazards and risks in our business, so we can avoid them. For this reason, we conduct Hazard Analysis Revalidations (HA-Rs) of our assets to capture any changes that may have occurred, and we audit ourselves to ensure nothing was missed. In our offshore operated facilities, HA-Rs are carried out on a five-year cycle. HA-Rs are conducted to comply with the Bureau of Safety and Environmental Enforcement (BSEE) and Safety and Environmental Management Systems (SEMS) standards per 30 CFR 250 Subpart S and API RP 75, with a focus on personnel safety, environmental protection and process impact.

In 2022, we completed HA-Rs on four offshore facilities, and corrective recommendations are being implemented.

Key highlights of our process safety efforts include:

- We developed a **Computer-Based Training** that details Murphy's Process Safety Program for all personnel who interact with Operations. This program is based on API RP 754.
- We implemented 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.
- Established a **Management of Change (MOC) Dashboard** that allows for more detailed scrutiny of which MOCs are in the 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.

These data-focused efforts allow us to specifically target reduction in elements that pose higher risk.

The number of Tier 1 events remained the same in 2022 as 2021, while the PSE Tier 1 rate improved from 0.20 to 0.14.

Process Safety Events (PSE)	2018	2019	2020	2021	2022
PSE Tier 1[14] Count	9	5	3	5	5
PSE Tier 1[14] Rate, per 200,000 work hours	0.15	0.10	0.12	0.20	0.14

Subsea Leak Detection

The subsea leak detection (SSLD) 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 are 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, conditional rate of change and modified mass in mass out. All offshore production operations staff have been trained on SSLD, which is now included as part of our competency program.

Murphy uses a risk assessment methodology to manage the integrity of the subsea system, including risers, flowlines, subsea equipment and subsea export pipelines, for all the operated assets in the Gulf of Mexico.

14 Per the API RP 754 and IOGP Report 456 definition.

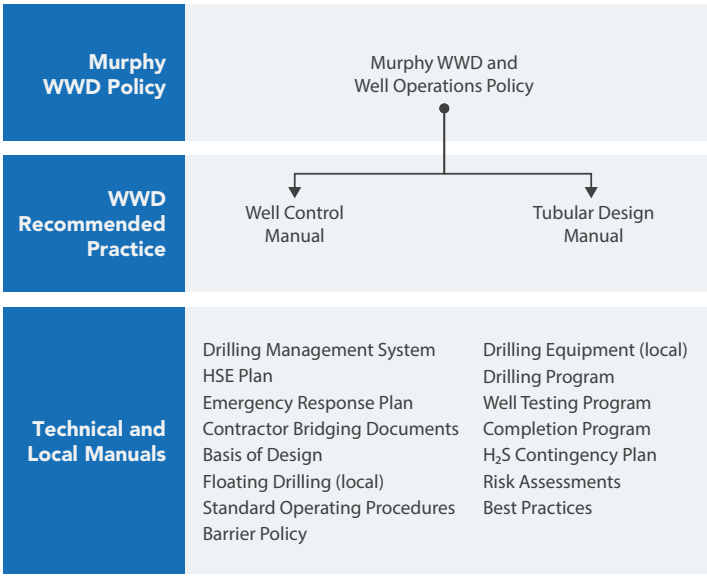
Well Integrity

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 employee to maintain well integrity while managing our onshore and offshore wells. It is our goal 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 (WWD) 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 (see page 61); and prevent incidents that could have a negative safety, environmental or economic impact. We review it periodically to assess changes and continuous improvement opportunities, and have a robust Management of Change process to implement modifications.

Our well integrity guidelines, policies and procedures are aligned with best practices and meet or exceed regulation and industry 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.

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:

- **Install 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. The cement blend is specifically tailored and tested for each casing string that is set at a different depth, temperature and pressure in the well.
- **Identify and mitigate potential drilling hazards** – We identify zones with potential drilling hazards (such as hydrogen sulfide, carbon dioxide or abnormal 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.
- **Implement 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, stimulation and well testing loads. We apply additional safety factors for various load conditions, including burst, collapse, tension, compression, triaxial and torsional stresses.

Drilling and Completions

As part of the completions process, physical isolation devices are put in place so 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 (BOPs), wellhead, casing, cement, packers and bridge plugs. While drilling, pressure tests are performed after each casing string is run and cemented, prior to drilling deeper to the next hole section. Before completions, pressure tests are performed to verify 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 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 WWD 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 whenever possible. 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 a drilling and well operations data management software program, to maintain all operational and 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 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 applicable 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.

A significant effort in our onshore business is the review of reusing or expanding old pad sites in order to place new future wells. This has been successfully done in Canada and is being reviewed in our Eagle Ford Shale operations in order to minimize future land use and impacts, see the Biodiversity section for Site Closure, Decommissioning and Restoration (page 46).

Murphy undergoes yearly reviews of lease statuses and land maintenance requirements. We include funding each year in our Long Range Plan and Budget to reclaim certain pad and road sites when applicable. During the Civil Construction building phase of pads and the reclamation process, we use biodegradable materials so that over time, the natural landscape is maintained, and we use local native soils and vegetation for regrowth, to maintain local biological profile.

We record a liability for asset retirement obligations and also include these obligations in our Long Range Plan.

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.

Chemical Stewardship

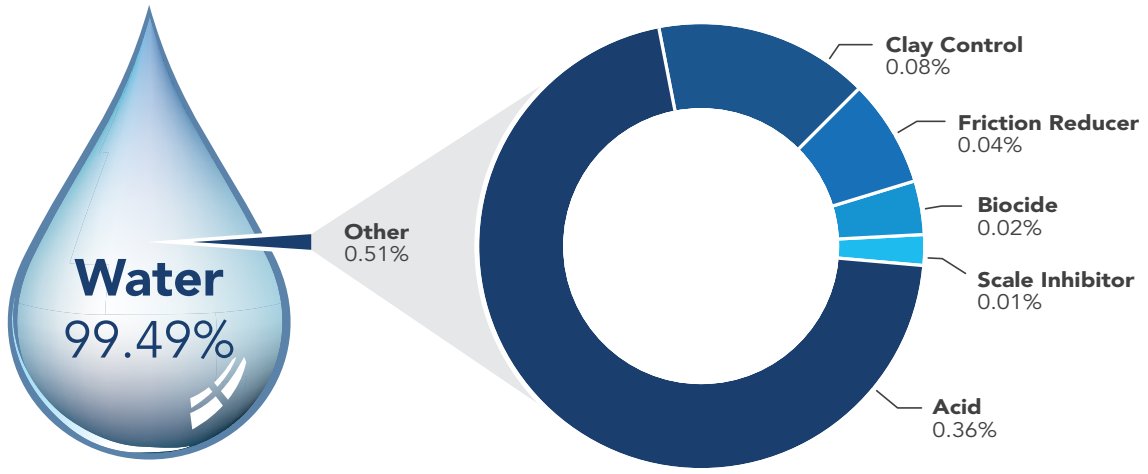
Onshore

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% of other additives.

We do not pump any fracturing fluids downhole that contain diesel, heavy metals like arsenic, cadmium, chromium, lead or mercury, or other harmful ingredients. We do not store additive chemicals on location. Instead, they are delivered and 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

Murphy employs a continuous optimization approach to the chemical program on our offshore facilities in the Gulf of Mexico. We focus on using production- and integrity-related chemicals, to maintain process and utility system integrity, reduce overall usage of chemicals that are discharged with the produced water and reduce risks associated with the transportation and handling of materials, as well as transportation-related emissions.

We require chemical vendors to commit to improvements in sustainability and safety. Murphy is working with our chemical suppliers to be proactive in developing chemistries that avoid use of components that are expected to be or may be classified in future as substances of very high concern (SVHC). For example, we are proactively piloting a replacement for a corrosion inhibitor used on one Gulf of Mexico facility. The incumbent chemical contains a component that is not yet classified as a SVHC in the US but has been elsewhere.

We are also working with vendors on new product development to reduce overall chemical usage, and conducting audits of chemical program efficacy and other HSE aspects.

Key improvements recently achieved include:

- Upgrade of pump infrastructure based on historic and forecast usages and the identification of operational strategies to optimize the need for chemical treatment
- Conducting technology trials of new produced water treatment and chemicals at our Delta House facilities
- Regular lab testing to identify opportunities to optimize hydrate inhibitor usage. Testing for one field found the required dosage rate could be reduced by over 50% for start-up operations
- Reducing chemical usage by 30% at Murphy's new King's Quay facility
- 50% reduction at our Medusa facility in the Gulf of Mexico, from May to December 2022

Seismicity

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 Energy Regulator (BCER)** – Tupper Montney operations are conducted outside the BCER 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 TXOGA recommended best practices initiative on induced seismicity.

Murphy has developed a robust Induced Seismicity Protocol to manage induced seismicity and maintain 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 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 academic participants, which furthers the understanding of potential causes and mitigation steps to manage induced seismicity.

Offshore

Murphy undertakes a variety of offshore seismic surveys for identification of shallow drilling hazards, for archaeological surveys, for pipeline route surveys and for 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.

Induced Seismicity Protocol

We follow a three-part Seismicity Risk Assessment as part of our well planning and drilling management approach:

- **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.

During operations, we continue to address potential seismicity, employing various means, such as:

- **Monitoring Plan** – Seismic monitoring provides 24/7 coverage during frac operations, and allows detection and location of anomalous induced seismicity.
- **Communication Plan** – We have a process in place 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.

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 of waste, where practicable. Waste prevention and reduction at source are Murphy's preferential options and are deployed whenever possible.

During the drilling process, Murphy stores, treats, transports and/or disposes of generated waste in ways that work to protect the environment and are based on waste management best practices and principles. While drilling, we simultaneously separate, or "strip," fluids from the mud/drill cutting matrix to be reused in the ongoing drilling operation. The fluid can also be stored short term for use on future planned wells on the same multi-wellpad. Fluid capture and reuse 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, shale shakers, centrifuges and vacuum trucks. An ancillary benefit of closed-loop systems is that they avoid the need for supporting pits or sumps, directly reducing construction costs, improving safety, reducing environmental impacts and improving overall wellbore economics. Waste streams left over from drilling operations are transported to approved oilfield waste management facilities, where they are treated and disposed of following safety and environmental protocols. We manage every load through waste characterization and classification, manifesting and tracking processes.

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 permitting 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 audit our preferred facility locations to verify compliance with their permitting approvals under federal, state and local regulations.

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. Necessary decontamination activities are carried out per regulatory requirements. The onshore disposal facilities are audited by Murphy to ensure that correct handling measures are taken and that disposal complies with state and federal regulations.

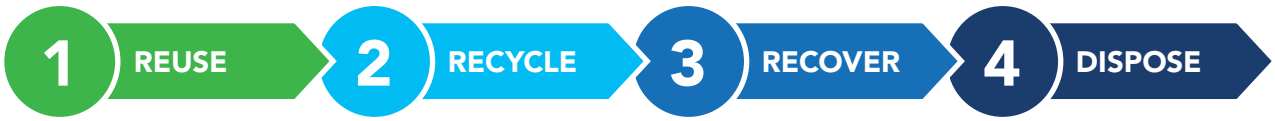
Drilling and production waste is managed in accordance with NPDES parameters, which include daily visual monitoring and periodic sampling. Compliance with this system is reported quarterly to the EPA.

We use specific synthetic-based drilling fluids that reduce environmental impacts 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 methods mandated by the EPA.

Food waste from the galley is macerated on the platform or vessel and discharged overboard, in compliance with international regulations under the International Protocol for the Prevention of Pollution from Ships (MARPOL). 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.

In 2022, Murphy initiated a pilot program to improve recycling at our offshore facilities, and we are monitoring the outcomes to enhance efforts.

Our Waste Hierarchy



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 ROC, to address real-time situations, including remote shutdowns, with operator route optimization. Another example is with our offshore chemical usage monitoring. We work with our chemical supplier, utilizing a dashboard that allows us to monitor chemical injection rates down to the well level, as well as to compile and trend all lab testing data that is crucial for monitoring the health and integrity of the subsea and topsides facilities.

These applications help us to avoid potential incidents and to respond more quickly to out-of-the-ordinary 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 to conduct safer operations.

Remote Operations Center

Murphy's 24-hour 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 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.

Murphy's US onshore team is also implementing a newly developed software we will pair with our ROC group to enhance visibility and efficiency of field operations. The Smart Planning Engine (SPE) is an in-house Integrated Planning Tool that allows all parts of our organization to view daily planned events and optimize worker interactions, and also to reduce reaction time to downtime events. With visibility on all staff locations and work tasks, we can quickly monitor and optimize work interactions where needed. We believe this greater visibility will ultimately continue to improve our safety and emissions performance, by allowing for better planning, quicker reaction times and by helping us place the right people to respond to events that may impact our emissions on a daily basis.

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** – This tool was developed in-house collaboratively by engineers, field operators and developers to amplify production surveillance. It 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 are expected to be in place for all assets by year-end.
- **HSE Observation Program (OP)** – Workers use this mobile platform to document safety observations in real time while in the field. This data is then processed to assist in identifying hazards, predicting trends, taking corrective action and reinforcing positive behavior, while improving overall safety performance. See Protecting Our People for more information on our OP program, on page 64.
- **Digitalizing offshore facilities** – We have deployed Laser Scan technologies within our offshore installations to create 3D digital models of the assets. These digital twins are used to bring more work to a tabletop exercise in-house, replacing offshore trips and reducing our exposure and risk from a personnel aspect, while improving efficiencies. These 3D models can be used by various disciplines at Murphy, including, but not limited to, integrity management planning, brownfield project planning, hazard and risk analyses, and as an overall communication tool between field and office personnel.

3 Protecting Our People

Safety Performance
performing better than industry average

Culture of Safety
monitoring and enhancing

Contractor Management
continuing to strengthen

Murphy is committed to conducting business in a manner that prioritizes 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 send all our people home safely each day by reducing risk in the workplace.

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

Health and Safety Oversight

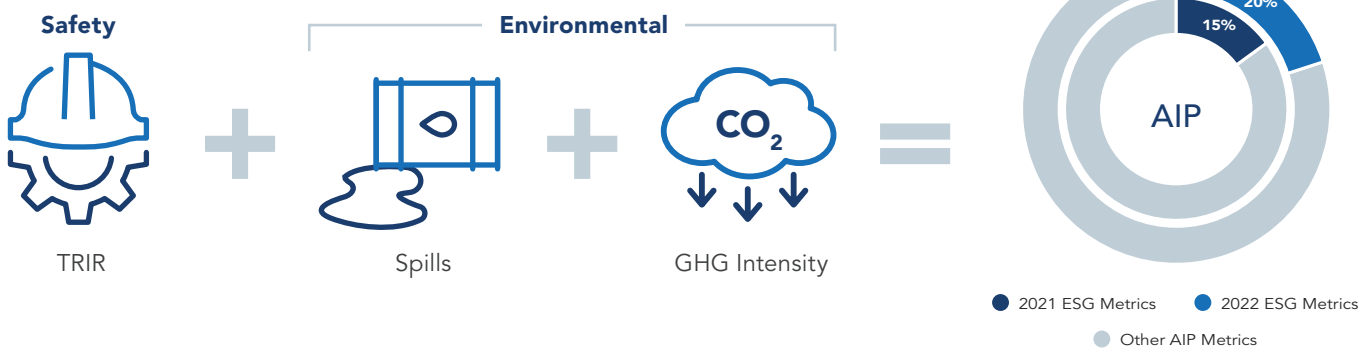
In 1993, the Murphy Board established a Health, Safety and Environment Committee to govern the Company's health, safety and environmental activities. Since then, the Committee has expanded its responsibilities to include corporate responsibility matters and was renamed the Health, Safety, Environment 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 details on the HSE&CR Committee and corporate oversight of climate change initiatives can be found on page 27 of this report.

Our President and Chief Executive Officer is responsible for the Company's execution of our HSE Policy. That responsibility is supported by the HSE Executive Management Advisory Committee (EAC) comprised of the Executive Vice President, Operations; Vice President, Health, Safety and Environmental; and the Vice President, Operations. 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. In addition, the HSE Steering Committee, comprised of cross-functional leadership across the organization, including Operations, Engineering, Supply Chain and Finance, meets on a quarterly basis to discuss current status and Company goals pertaining to health, safety and the environment.

Implementation of Murphy's HSE Policy is assigned to the Vice President, Health, Safety and Environmental. This role reports to the Executive Vice President, Operations, 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 Murphy's Annual Incentive Plan (AIP) since 2008. Our AIP is comprised of three ESG metrics, including a safety goal based on the Company's Total Recordable Incident Rate (TRIR), and two environmental goals based on our global spill rate and greenhouse gas (GHG) emissions intensity. In 2022, the Compensation Committee of the Board increased the combined total weighting of these ESG metrics from 15% to 20% to reflect further emphasis in these areas.

Annual Incentive Plan (AIP) for Compensation
ESG Metrics Weighting Increased to Reflect Emphasis



Health, Safety and Environmental 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 Murphy HSE-MS includes Global Standards and Business Unit (BU) programs that cover HSE policies, procedures, regulatory requirements and audit/assessment requirements. For details on the environmental aspect, please see the Environmental Protection and Conservation section (see page 17).

The HSE-MS Consists of Four Levels

1 HSE GLOBAL POLICY
Direction is provided by Murphy's HSE Policy and HSE-MS framework.

2 GLOBAL STANDARDS
Expectations are articulated through associated global standards.

3 BUSINESS UNIT PROGRAMS, PLANS AND PROCEDURES
Business unit programs outline the requirements and objectives, to ensure implementation of the expectations in daily activities.

4 SITE PROCEDURES AND WORK TOOLS
Site-specific procedures and work plans are in place to achieve the requirements and ensure safe work practices and regulatory compliance.

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.

Safety Performance Monitoring and Measurement

We use a range of performance metrics to assess and measure our safety culture, and derive accountability for safety performance. Each year, we set a TRIR[15] target for executives and employees as part of our AIP. In 2022, we met our annual target range.

The TRIR, including employees and contractors, was 0.37 in 2022, as compared to 0.28 in 2021. The key driver of this increase was the higher levels of activity than in prior years. Performance improvement remains a key focus as we continue to expand operations in the coming year. In addition, the majority of these recordable incidents were minor in nature.

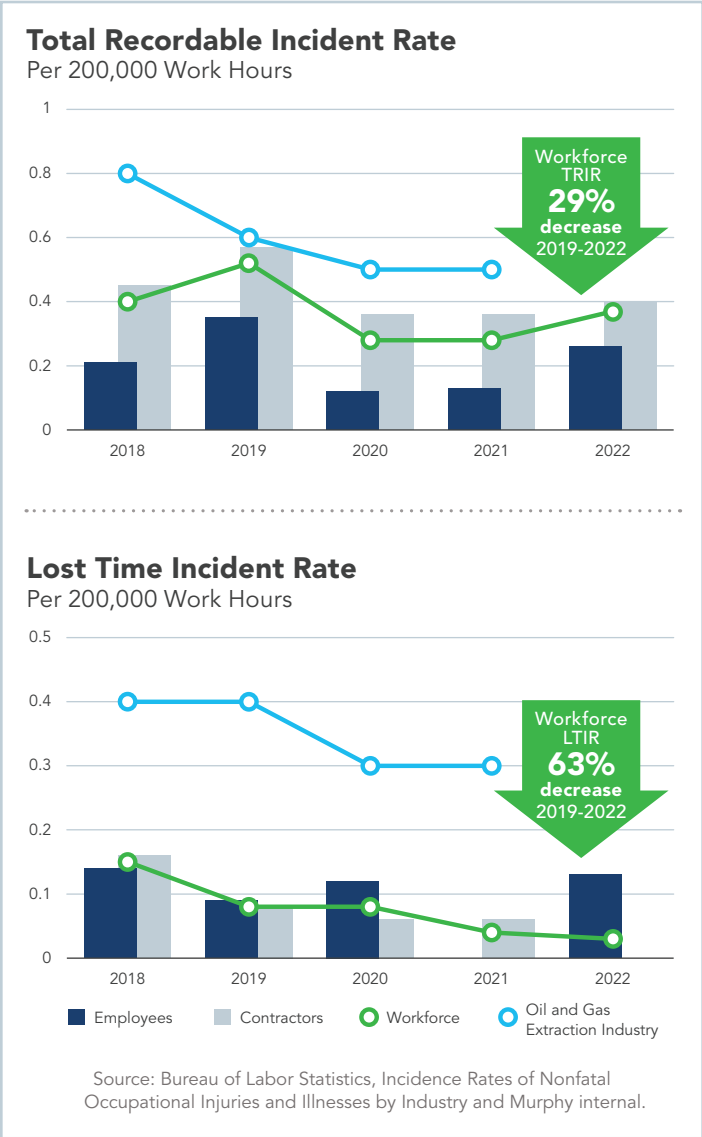
Lost Time Incident Rate[16] (LTIR), inclusive of actual contractor hours worked, improved year-on-year, from 0.04 in 2021 to 0.03 in 2022. Our LTIR was at its lowest since 2016. Murphy has consistently outperformed the US Bureau of Labor Statistics' average for the oil and natural gas extraction industry, as illustrated in the chart below.

There were zero work-related fatalities in 2022.

Comprehensive Safety Key Performance Indicators (KPIs)

In addition to reporting our TRIR, LTIR and number of fatalities, 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
- Safety observations
- Process Safety Events (PSE)
- Preventable Vehicle Incident Rate (PVIR)



Source: Bureau of Labor Statistics, Incidence Rates of Nonfatal Occupational Injuries and Illnesses by Industry and Murphy internal.

15 Number of US Occupational Health and Safety Administration (OSHA) recordable injuries and illnesses throughout the year, per 200,000 actual hours worked.
16 Number of OSHA recordable incidents that result in time away from work throughout the year, per 200,000 actual hours worked.

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. Opportunities for improvement are identified during this process, and corrective action plans are created to ensure that all items are addressed. Nonconformances are identified and improvement actions are submitted 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 March 2022, in accordance with the regulatory three-year requirement.

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 that 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 2022, 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 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, thanks to favorable insurance rates and the 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. Annual internal validation audits will continue to be performed, with an external audit cycle every three years.

Building a Culture of Safety

Safety must be a top priority for 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 any concerns with your supervisor before starting work again. Murphy's executive leadership 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.

Observation Program (OP)

The Observation Program 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 a basis for analyzing safety trends across our field operations and allows us to focus our repairs and maintenance, training and prevention efforts to improve overall safety performance. The Murphy HSE Team reviews all entries monthly for any pending corrective actions for the organization to address. Data indicates that workers are engaged in the observation process and using the reporting systems effectively.

Hazard Hunts

We have implemented multidiscipline, business unit-specific Hazard Hunts to identify and mitigate potential safety and environmental hazards in the workplace. Our offshore teams conduct weekly Risk-Based Inspections (RBIs), which allow small crews to focus on equipment or processes to ensure any potential hazards are being captured.

HSE Management Software

In 2022, Murphy implemented a new HSE Management Software to track all audits and assessments being conducted. This system has the capability to track corrective actions and verify that they are closed out correctly, in a timely manner. In 2023, additional modules will be evaluated within the system to help Murphy continue to grow and utilize new technologies.

Safety Stand-Downs

We use Company-wide Safety Stand-Downs to bring senior management, employees and contractors together to demonstrate a unified commitment to safety. Safety Stand-Downs are also utilized on a location-specific basis to address any immediate concerns or issues.

Contractor Engagement

Because contractors consistently make up over 80% of Murphy's work hours, engaging them in our safety procedures and standards is critical to the overall safety of our operations. Our approach to contractor engagement is focused on 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. We continue to build strong partnerships with our contractors to ensure an overall, unified HSE culture for everyone working on any Murphy location. See page 66 for more on contractor management.

Process Safety

Asset Integrity and Operations are at the core of our Process Safety initiative and play a key role in preventing serious incidents. Process Safety metrics and programs cover both onshore and offshore operations; all aspects of operations from the well to sales are within scope, which includes hundreds of miles of pipeline, thousands of pressure vessels and all associated pressure piping. We assess our performance by reporting and measuring our Tier 1, 2, 3 and 4 Process Safety Events (PSE). In addition to tracking actual incidents, which are lagging indicators of performance, we take a proactive approach by tracking leading indicators, which can help prevent serious incidents from occurring. For additional details, please refer to Asset Integrity and Process Safety in the Environmental Protection and Conservation section (see page 49).

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 like 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 57, under Digital Innovation.

Life-Saving Rules (LSR)

In 2022, we continued to communicate the nine International Association of Oil & Gas Producers (IOGP) Life-Saving Rules as a clear training and communications platform for safety risks and mitigations. In 2021, we also added the 10th rule, Fit for Duty, to our communication programs. Training and communication on LSR included Murphy-developed videos of employees and contractors that discuss the importance of the LSR not only at work but at home. Murphy's LSR includes contractor participation. At the end of 2022, over 1,200 observations pertaining to our LSR campaign were submitted for safe and/or unsafe conditions. This program empowers employees and contractors to not only work safely at work but to take these ideals home to their families as well.

HSE Training

Murphy continued to review and revise its HSE training matrix for all employees and contractors in 2022. Consequently, additional training was required for all employees, and supplementary leadership training for office personnel was established. The learning management system has been updated to reflect the additional training, and a dashboard is being developed to easily monitor and track training completion. In 2022, the average hours of health, safety and emergency response training per employee (including office and field personnel) was 17 hours, and per US-based contractor was 22 hours.

Vehicle Safety

In 2022, Murphy continued to improve vehicle safety by installing a vehicle monitoring system in all Company vehicles. The system helps to monitor all driving habits and identify the location of vehicles in the event of an emergency. All derived data is also used to enhance training and safety communications to employees.

Life-Saving Rules

Contractor Management

A key element of our HSE-MS is contractor management. Contractors play a significant role in all operations and represent more than 80% of the work hours performed. Selecting and collaborating with contractors is vital to ensure a unified commitment to maintaining a safe place to work, and ultimately improving HSE performance. Per the HSE-MS framework, contractors on-site are required to be registered on ISNetworld (ISN), a global leader in supplier and contract management. Murphy has a qualified supplier list to pull from on ISN with details on contractor grade, registration information, regulatory compliance and insurance, to verify that the very best contractors are being used.

When choosing to partner with a service provider, Murphy first utilizes ISN to assist in pre-screening, by assessing the contractor's HSE policies, performance and internal HSE management systems. For select major contractors, Murphy goes a step further and performs a detailed bridging process, where all the service provider's HSE policies and procedures are individually evaluated against Murphy's policies and procedures. Through this bridging process, we choose the more stringent HSE performance standards to govern the work contractors perform. Other non-HSE screening factors we use to assess suppliers are discussed in the Supply Chain Management section (see page 95).

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, Rigpass, Helicopter Underwater Rescue Training (HUET), Standardized Emergency Management System Awareness and United States Coast Guard (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 for each business unit. 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. In 2022, Murphy developed and shared a transparent program outlining Murphy's HSE requirements, which allows contractors to verify that they are meeting or exceeding our standards. This approach provides the opportunity for strengthened partnerships with the contractors and improves their organizations' requirements prior to performing work at any Murphy location. Murphy also shares all our LSR and HSE alerts for engagements or safety meetings prior to conducting any work.

Murphy requires third-party contractor companies to conduct random drug testing on their employees. To supplement this, in 2022, all asset groups contracted a global third-party consortium to start the process of implementing standardized random drug testing for all contractors and vendors working at any Murphy location. The consortium is linked with ISN, allowing us to monitor companies and individuals visiting or working at our facilities. This consortium allows Murphy to effectively manage third-party screening under a comprehensive umbrella, across all registered oil and natural gas operators.

Emergency Response and Preparedness

Murphy takes an all-hazards approach — meaning we proactively consider all possible risks, incidents and events — to developing our preparedness for events that have the potential to negatively impact our employees and contractors, the general public, the environment, facilities, operations and other stakeholders. We have plans and procedures in place to minimize environmental and safety risks and hazards and respond to emergencies if they should occur.

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

Our Emergency Response and Crisis Management Plans apply to any emergency event. Murphy has a dedicated Manager of Security and Emergency Response, who is responsible for emergency preparedness and response-related activities.

Murphy Utilizes 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 Plan, and Well Containment Plans are established for all active wells.

The Incident Management Team structure includes a Public Information Officer, who prepares messages, communications and press releases for the team if necessary. For internal emergency messages, a proprietary communication system, Murphy Alert (MIR3) is utilized, which allows a combination of text, email and voice notifications, and allows for responses.

Because Murphy recognizes that emergency response plans are most effective when accompanied by regular and comprehensive training, a global training and drill schedule is maintained 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 external emergency response resources and agencies.

In 2022, six training courses were provided in support of the 13 tabletop and major response exercises conducted across the organization. In addition, more than 600 regulatory and non-regulatory drills were conducted at our office and field locations.

For major drills conducted, our contractor work groups and regulatory agencies are invited to participate, and we encourage knowledge sharing across all functions. This allows Murphy to build strong relationships and rapport with stakeholders, to address any future events that may occur. For all drills and exercises conducted by Murphy, an after-action review is performed to help identify and improve any gaps in our processes and procedures.

We also revised our Business Continuity Plan in 2022. Each business unit performed a Business Impact Analysis to understand the resources needed to conduct business as usual following a major event, such as a hurricane. We collaborated with a third-party crisis and emergency management specialist firm to streamline existing processes.

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.

Industry Collaboration

Murphy actively participates in industry efforts to advance safe operations. For example, for our Gulf of Mexico operations, we work closely with the Offshore Operators Committee (OOC) and the Centre of Offshore Safety. For our US onshore operations, we actively engage with the Onshore Safety Alliance (OSA) and for Canada onshore, with Energy Safety Canada. Our employees sit on various subcommittees and workgroups of these organizations. Some other industry groups Murphy participates in are HWCG, the American Petroleum Institute (API) and the Canadian Association of Petroleum Producers (CAPP).

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, which reports to the Murphy Security and Emergency Response Manager.

We regularly provide upgraded security training to employees and conduct security exercises and drills. Some of the training provided includes active shooter response, basic investigation which focuses on key elements of a crime, and travel security training for all employees. The Security and Emergency Response Manager belongs to multiple security and law enforcement working groups and committees, and 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.

4 Investing in Our People

Diversity, Equity and Inclusion
continuous focus with new programs

Benefits Package
reviewed and enhanced

14,000+ Training Courses
offered to our workforce

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.

Workforce Development Oversight

Our Board is actively engaged on matters pertaining to our workforce. The Board's Compensation Committee oversees and reviews the Company's key human capital management strategies, planning and assessments annually to ensure alignment with our short- and long-term business goals. This includes diversity, equity and inclusion (DE&I) programs, pipeline talent management and succession plans. Our Vice President, Human Resources and Administration, has overall managerial accountability for our human capital management and DE&I strategies and programs.

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 work to build an environment where everyone can respectfully share and be their authentic self.

We partner with many organizations to increase the diversity of candidates in our talent pipeline. For example, we post open positions through eQuest, which distributes the roles to diversity and inclusion organizations including VeteranJobListings. We also post engineering job openings to the Society of Women Engineers and the National Society of Black Engineers.

We equip managers with tools to support inclusive hiring, including an interview guide to reinforce a fair and equitable process. In 2022, we continued with the practice of blind résumé screening for select roles, which involves removing candidate names and other identifiable characteristics to reduce any unconscious biases. We plan to continue this process in 2023. In 2021 and 2022, we provided a Rating Bias training for leaders as part of our formal performance management process, which aims to help leaders build awareness of and then address potential biases that may emerge during the performance rating process.

Our new hire onboarding process includes training on "Understanding Unconscious Bias" and "Your Role in Workplace Diversity." We also offer to all employees a broad range of educational programs on topics such as "Maintaining a Cohesive Multigenerational Workforce," and "Women, Confidence and Leadership," while also sharing resources specific to practicing inclusiveness.

In 2022, we continued to enhance our DE&I dedicated intranet portal. This is a tool for 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 Women's Chamber of Commerce, including a celebration of International Women's Day, and attended Women's Energy Network and Greater Houston Partnership events. Additionally, our Company strives to recognize annual DE&I milestones, like Black History Month, Hispanic Heritage Month, Asia Pacific American Heritage Month and Veterans Day, and by also offering employees opportunities to participate in related Company and community events.

Diversity, Equity and Inclusion Committee

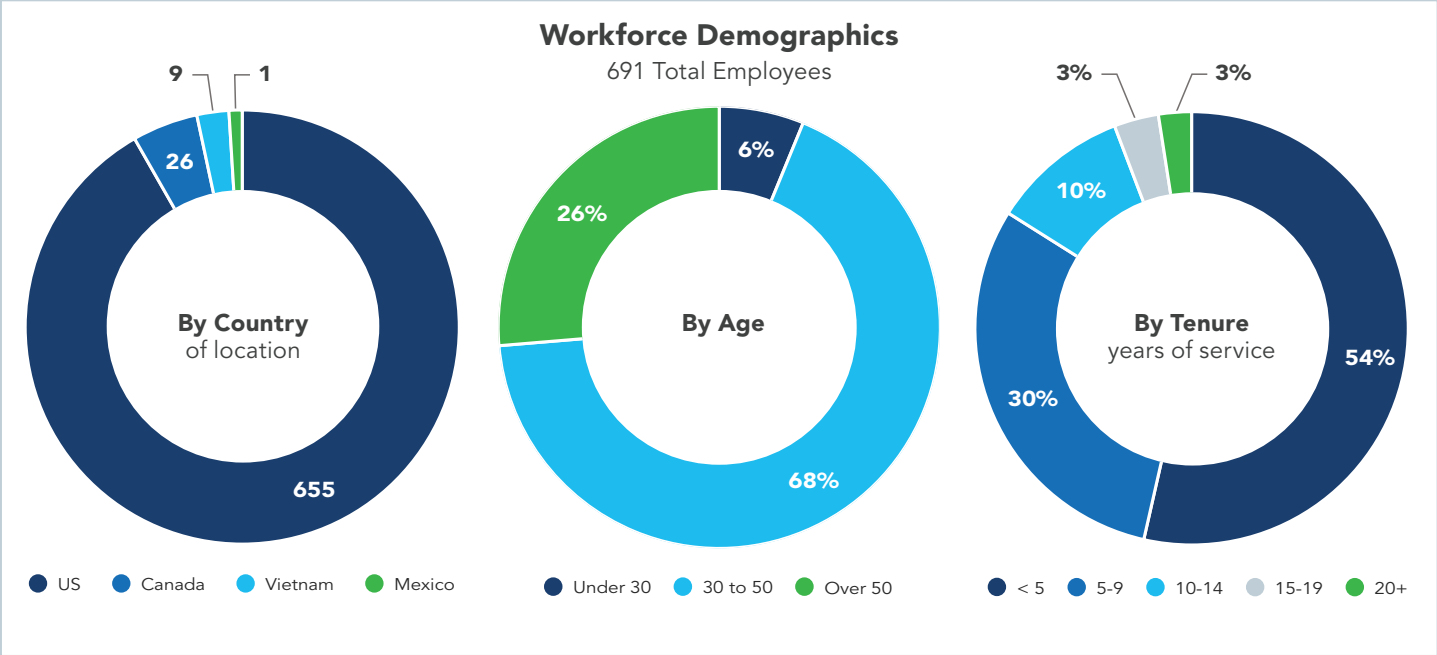
The Diversity, Equity and Inclusion committee, which consists of volunteer employees at various levels in the organization, acts as a change agent to promote a greater DE&I culture, where employees are respected and intentionally valued through open, honest and productive discussions. The committee is responsible for reviewing and recommending initiatives and partnerships that build upon our DE&I strategy and support our Mission, Vision, Values and Behaviors. The committee is sponsored by the Vice President, Human Resources and Administration, and led by our Senior Manager, Human Resources.

"The rich experiences and backgrounds of our employees strengthen our Company, create a productive workforce and contribute to our success. We are committed to creating a work environment where everyone can respectfully share and be their authentic self."

Understanding Our Workforce

We track and report workforce demographics as part of our commitment to promote workforce DE&I. We track age, gender and race/ethnicity for all full-time employees (see charts and tables below).

In compiling the data, we categorize employees according to the US Department of Labor's Equal Employment Opportunity Commission (EEOC) definitions. In response to stakeholders' request for the disclosure of EEO-1 data, we began publishing our EEO-1 filing in 2021 on our **website**. A summary of this data, as well as our global representation of women, is outlined in the following tables. Murphy does not have any part-time employees.



Representation of Women US and International	2018[17]	2019	2020[18]	2021	2022
Executive and Senior-Level Managers	16%	14%	12%	12%	16%
First- and Mid-Level Managers	20%	22%	17%	18%	22%
Professionals	36%	34%	34%	34%	35%
Other (Administrative Support and Field)	20%	20%	7%	7%	5%
Total	**28%**	**27%**	**21%**	**21%**	**21%**

Representation of Minorities US-based Only	2018	2019	2020	2021	2022
Executive and Senior-Level Managers	8%	9%	12%	18%	26%
First- and Mid-Level Managers	24%	24%	23%	22%	26%
Professionals	25%	29%	33%	34%	39%
Other (Administrative Support and Field)	32%	36%	31%	31%	30%
Total	**27%**	**29%**	**30%**	**30%**	**33%**

17 2018 data includes employees in Malaysia.
18 The reduction in the percentage of women in 2020 was primarily driven by: (i) the closure of the El Dorado, Arkansas, and Calgary, Canada, offices, where we historically had a high percentage of women employees; and (ii) focused hiring efforts for field operations, which historically attracts a pool of male candidates.

In 2022, while our percentage of total women did not change from 2021, women in leadership roles improved. Our overall percentage of racial/ethnic minority employees improved from 2021, as well as racial/ethnic minorities in the leadership and professional categories.

Pay Equity

We are committed to a fair and living wage for all employees. 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 also reviews external market data to ensure fair and competitive compensation practices both for employees and new hires. Murphy quickly works toward closing gaps if any issues are identified.

Local Hiring

Where possible, 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 nationals of the local host country. When immediate talent is not available, we ensure proper training is offered. In 2022, the percentage of local nationals was 100% in Canada and 89% in Vietnam.

Ongoing Efforts

We will continue to build upon our workplace DE&I efforts, with a focus in 2023 on developing employee resource groups (ERGs), expanding university partnerships, and offering targeted and elective training and development opportunities for our employees. We view ERGs as a forum to create opportunities for mentoring and career development for employees.

Murphy's approach to DE&I is comprehensive and goes beyond our efforts with employees. For example, Murphy is committed to our supplier diversity and expanding partnerships with minority-, women-, veteran-, and LGBTQ-owned businesses or designated as a small business owner by the US Small Business Administration, as discussed in the Supply Chain Management section on page 95.

Industry Recognition

We are honored that outside organizations recognize our efforts. In 2022, the Energy Diversity and Inclusion Council recognized one of our senior executives as one of the "Top 100 Diversity Leaders in Energy." In addition, our Vice President of Human Resources received the Chapter Chair of the Year Award, presented by the Greater Houston Women's Chamber of Commerce and was recognized in the Latino Leaders magazine's "Latinos in C-Suite."

For the second consecutive year, we have received recognition from the Greater Houston Partnership as a "Best Place for Working Parents®," for our commitment to supporting working parents through our family-friendly policies and practices.

SUPPORT EACH OTHER

Our DE&I Journey

In 2019, Murphy formally launched the DE&I program to help promote an inclusive culture. Since then, the DE&I Committee, in partnership with Human Resources and with the support of executive leadership, has:

- Launched the speaker series focusing on DE&I
- Incorporated DE&I training modules
- Developed a dedicated resource page on the Company's intranet
- Enhanced interview guidelines and questions to ensure inclusivity
- Implemented mandatory DE&I training
- Enhanced benefits programs to be more inclusive
- Reviewed Human Resources policies for inclusiveness
- Continued to build relationships with external organizations that support DE&I
- Focused on community engagements to support the recognition of DE&I group milestones

In the fall of 2022, the DE&I Committee and Human Resources participated in a workshop to reassess DE&I initiatives and develop program strategies. One of the outcomes of the workshop was the creation of Murphy's DE&I definition, which aligns with our Mission, Vision, Values and Behaviors, as seen below.

What DE&I Means to Murphy

Cultivating an environment of acceptance and belonging.

DIVERSITY	Promoting a workplace of diverse thoughts, experiences and identities.
EQUITY	Allocating resources and opportunities that embrace the fair treatment and participation of all employees.
INCLUSION	Fostering a work environment where all employees are respected and can contribute to the organization's success.

In addition, the ERG framework was created to help promote the groups as a vehicle for employee engagement. One recently launched ERG is the Hispanic and Latino ERG.

Benefits and Wellness

Murphy provides a **comprehensive benefits** package designed to drive employee wellness, healthier lifestyles and help our people prepare for their future. This includes health coverage – medical, dental and vision – for employees and their families.

Murphy also provides a defined-benefit pension plan and a defined-contribution savings plan designed to assist employees in building savings for retirement. Employees can access real-time pension information as well as model future retirement benefits via a web portal designed specifically for Murphy. Murphy retirees also have access to this portal and are able to view their defined benefits. Murphy is currently developing a digital "Total Rewards Statement" that will provide employees real-time details on their total compensation package. This digital statement is to be implemented in 2024.

In 2022, we expanded our benefits package to further support our diverse workforce, including:

- Expanded mental health network of providers and coverage for behavioral health
- Moved to a healthcare provider with enhanced resources focusing on wellness, healthy lifestyles and ease of employee accessibility, with improved technology

Wellness

Murphy offered a host of programs and educational sessions in 2022 to support employees' wellness. Several employee assistance sessions focused on ways to manage stress during difficult times. In addition, we implemented a new dedicated website to provide information on staying healthy, including webinars and articles on a variety of wellness topics. We continue to encourage employees to use available telemedicine resources both for medical and behavioral services.

Additional Benefits

- Consumer Driven Health Plan Medical Option with a competitive Company Health Savings Account (HSA) contribution funded up front
- Defined-Benefit Pension Retirement for all eligible employees
- 401(k) Savings Plan with Company Match in the US
- Defined-Contribution Pension Plan with Company Match in Canada
- Employee Assistance Program
- Telecommuting Policy – eligible employees may work up to two days per week from home
- Birth and Adoption Leave for mother and father
- Infertility Treatment Coverage
- Personal Paid Leave for personal business
- Other Paid Leave with flexible benefits for bereavement, jury duty and military leave
- Vacation Policy – eligible employees may roll over a week of vacation each year
- Floating Holidays
- Flexible Spending Account – healthcare and dependent care
- Short-Term Disability Plan
- Long-Term Disability Insurance
- Occupational Accidental Death Insurance
- Life and Accidental Death and Dismemberment Insurance
- Employee Educational Assistance
- Service Awards

Talent, Recruitment and Development

We manage our employees' performance through a formal annual review process. This process covers career development discussions and assesses each individual's performance as well as behaviors that are tied to our Purpose, Mission, Vision, Values and Behaviors. We encourage leaders and employees to connect on a quarterly basis to reflect on growth and future opportunities tied to their career development plan and goals. In 2023, we implemented a tool that builds individualized training plans that align with personal career goals. Through this tool, our employees can develop in their current or future roles by taking advantage of courses that meet their unique training needs.

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, and introduced a mentoring program that allowed us to identify employees with an interest in enhancing their development through mentorship.

Murphy Mentorship Program

Our Human Resources team, in partnership with the Operations function, launched our inaugural Murphy Mentorship Program. The ultimate aim of the program is to assist and motivate employees to achieve their career and personal aspirations. Through the guidance, support and network that mentorship provides, employees are enabled to develop technical or non-technical acumen, deepen their understanding of the Company's values and culture, and build leadership skills and diverse skills. The program was offered to all Operations employees, and more than 10% of the Operations employees requested and received mentors. Based on the feedback from both the mentees and mentors, the program will be enhanced, with the intention to extend it to the rest of the Company.

Leadership and professional development investments in 2022 included:

- Online My Murphy Learning programs for all employees
- Opportunities for all employees focused on increasing productivity and improving effectiveness
- Leadership development through microlearning courses
- Supervisor Toolkit providing training for individuals entering into a first-time supervisory role

Some of the top elective courses accessed by our employees in 2022

1 Women, Confidence and Leadership

2 Engaging and Retaining Talent

3 Your Leadership Journey

In 2022, through My Murphy Learning, our internal Learning Management System, we offered our workforce more than 14,000 professional and technical courses, with employee training time totaling 12,808 hours, for a total spend of approximately $770,000.

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.

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 the American Association of Petroleum Geologists (AAPG), Greater Houston Partnership and Greater Houston Women's Chamber of Commerce.

Murphy's Internship Program, which takes place over 12 weeks in the summer, offers a variety of opportunities to students from varying majors. The students are given active projects and partnered with a mentor to help guide their progress during the internship. The interns also have the opportunity to interact with other interns and Murphy employees across different functions, working on a variety of projects to learn about all aspects of the industry as well as to engage in team-building and professional development activities.

We had interns join our Finance, Data Science and Geology teams in 2022. At the conclusion of the program, we extended full-time employment to several of the interns. In 2023, we expanded our program with coverage to our Engineering and Information Technology (IT) teams.

Murphy is also a member of the American Petroleum Institute (API) and is a supporter of its SkillsReady Program. SkillsReady is a job readiness program providing participants a four-month course covering practical industry knowledge. Murphy employees also participate in the API Opportunity@Work subcommittee, promoting the hiring of non-degreed skilled personnel. By supporting initiatives like these, we are investing in our communities, while building a recruitment pipeline for our Company and industry.

Employee Engagement

We believe that employee engagement is key to fulfilling our purpose, core values and organizational success. In 2022, we conducted an annual global employee survey to better understand employee engagement and employees' priorities. The survey covered topics including career development, DE&I, retention, engagement and communication. Top strengths identified were employees feeling supported and respected, being informed of Murphy's goals and trust in our leadership.

Other avenues for engagement include town halls that are held quarterly, providing employees a forum to be informed and heard. We also hosted several appreciation events for our office and field employees throughout the year. These events allow for our HSE, Human Resources and IT departments to engage with all our office and field personnel on pertinent topics.

Murphy's Ambassador Program is a group of employees from different locations, functions, roles and shifts throughout the organization who serve as representatives for all employees. The Ambassadors' mission 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 leadership team.

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, the Board, retirees and the Company. This fund epitomizes how our employees live out our values of supporting each other and making it better.

Retention and Turnover

We track global voluntary employee turnover, broken down by geographic location. This data is shared on a regular basis with our executive leadership team, who use it to develop our human capital strategy. In 2022, the Company's global voluntary turnover rate increased to 11%.

To better understand and address this unprecedented time in the labor market, we conducted an employee survey to assess our human capital risks. In response to the survey outcomes, we partnered with employees and leaders across the organization to build action plans to improve retention. Areas of review included career progression and flexibility in the workplace. For example, based on the feedback, we enhanced programs to support retention such as "Dress for Your Day" policy, our summer remote work program and Murphy Mentorship Program.

Additionally, we have worked to enhance our talent pipeline with multiple internal and external programs, such as our Internship Program, and API's SkillsReady Program and Opportunity@Work. We also encourage employee participation and open communication at the grassroots level, through the Ambassadors, DE&I Committee, department town halls and interactive sessions with our leaders and executives.

Workforce Metrics	2018[19]	2019	2020	2021	2022
Employee Count (Total Company)	1,108	823	675[20]	696	691
Median Age	42	43	42	43	42
Employee Turnover (Voluntary)	8%	10%	6%	6%	11%

Leveraging Digital and Process Transformation to Increase Focus on Employee Engagement

In the journey toward excellence, the Human Resources team embarked on a digital and process transformation in 2021 and 2022. The Human Resources team leveraged cross-collaboration between our IT and Operations business functions to help automate manually intensive processes across internal and external systems. Manual processes that would take from one day to a week were reduced to 30 minutes and half a day, respectively. Increased automation allowed the Human Resources team to shift from day-to-day transactional activities to focus on strategic business solutions that drive process improvement and innovation. This allowed Human Resources to focus on employee engagement and elevate the value of Murphy's benefits and wellness programs.

19 2018 data includes employees in Malaysia.
20 The employee count reduction in 2020 was primarily driven by the closure of the El Dorado, Arkansas, and Calgary, Canada, offices.

5 Community Engagement

El Dorado Promise
16 years of scholarship awards

$3+ Million
in charitable contributions over the last three years

US President's Volunteer Service Award
for our efforts with the Houston Food Bank in 2021 and 2022

Positive relationships with the local communities in which we work are 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.

Community Engagement Oversight

The Health, Safety, Environment and Corporate Responsibility (HSE&CR) Board Committee has oversight on policies and matters pertaining to communities, human rights and Indigenous rights and engagement, while managerial oversight lies with our Senior Vice President, General Counsel and Corporate Secretary.

Working With Communities

When possible, we work in partnership with our communities to understand our impacts and opportunities to succeed together. We seek to participate in constructive community engagement and maximize our positive impacts on local communities, while minimizing any negative impacts. Before we make an investment or commence any new operation, we follow processes to identify local community and stakeholder concerns and work to effectively mitigate any known associated risks. This includes conducting community impact assessments before settling in new areas, conducting consultations at early stages of a project and ensuring ongoing consultation mechanisms are in place. See below for an illustration of how we have applied these processes in our Mexico operations.

Murphy communicates with host country and community stakeholders, including regulators, nongovernmental organizations and other policy influencers, to better understand their concerns applicable to our operations and to mitigate potential risks to the Company's license to operate. Our active engagement with stakeholders helps us to better understand their interests and concerns, leading to mutually beneficial outcomes. 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, we assess the nontechnical, aboveground risks. This includes an assessment of key demographics, geography, economic standing and outlook, political system and geopolitical relations, regulatory and fiscal regimes, human rights and Indigenous rights, and political and security risks.

We seek opportunities to support local communities when negotiating and entering production-sharing contracts, for example 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

MAKE IT BETTER

Contributing to the Education and Development of the Local Workforce in Mexico

As part of our commitment to our host country, Murphy has worked with local Mexico state governments to put forward initiatives that benefit the communities, with a focus on education and development of the workforce. For example, in 2022, Murphy donated laptops to a local school in the town of Jalapa, Tabasco. This donation was part of a cooperation agreement with the Tabasco state Education Secretariat and will allow local students to practice what they have been learning in computer science lessons that were being taught with no hardware.

Additionally, we entered into a cooperation agreement with the Tabasco state Energy Development Secretariat, through which the state helps Murphy identify students and recent graduates from local educational institutions to participate in training opportunities. These could entail courses and workshops that enable technology transfer and provide the beneficiaries with industry expertise and exposure relevant to our activities in country. Under this framework and as part of the exploration drilling activities carried out in 2022, Murphy identified students and young professionals for internship opportunities. This gave them firsthand exposure to deepwater operations, an area of limited local knowledge.

Murphy also invited students from local universities in Tabasco to attend the Drill-Well-on-Paper workshop. Students benefited from the live event, which involved all vendors and service providers participating in the drilling operation that took place in that year. Students got to listen as the team reviewed and discussed, step by step, the planned deepwater activity. After the work session, Murphy's staff held a Q&A session with the students, helping them make the most of their experience.

Understanding and Responding to Community Feedback

We seek to be a good neighbor in the communities where we operate by listening to community interests and concerns and responding as best as we can. In the US, community stakeholders can raise concerns or grievances directly with our Land Department, using an **owner relations website** and phone number. 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 Murphy 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 team maintains responsibility for response and resolution, as per the British Columbia Energy Regulator (BCER) and Alberta Energy Regulator (AER) public consultation guidelines.

We are committed to ongoing consultation with local stakeholders throughout our operations. Our rigorous community consultation process is regulated by the AER and the BCER. Members of Murphy's surface land team actively participate on several community relations committees: the 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 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 they relate 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 its Mexico operations, Murphy conducted a social impact assessment and 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.

RESPECT PEOPLE, SAFETY, ENVIRONMENT AND THE LAW

Respecting Our Landowners and Local Residents by Mitigating Noise

We take great care to engage early and work together to address concerns effectively. For example, before we move onto a new completion pad in Tupper Montney, British Columbia, we conduct a tabletop Noise Impact Study in accordance with the requirements defined by the BCER Noise Control Best Practice Guideline. We run multiple simulations pre-operations. For example, we model the daytime and nighttime sound pressure levels at each of the residences in proximity to the completions operations, to ensure Murphy complies with applicable regulations. Once the completion equipment moves on-site, real-time decibel readings are taken at each residence to confirm the study. If the decibel readings are higher than modeled, we take steps to address sound impacts, such as adding additional sound barriers to mitigate the sound pressure levels. We take sound readings again after implementing mitigations to confirm the noise is under the defined decibel level.

In Alberta, noise impact studies are completed as part of the facility permitting process, to determine impact on any nearby residences. We implement recommendations of the noise impact studies on a case-by-case basis.

In our Eagle Ford Shale assets in Texas, we have undertaken research to understand and mitigate impacts of gas lift compressors on nearby residents.

Sound barrier installation at Eagle Ford Shale

Human Rights

Respect and dignity for everyone is a cornerstone of the way we do business and of our success. To Murphy, respecting all people is part of our core value to "Do Right Always."

Murphy developed a formal **Human Rights Policy** in 2021. This policy acknowledges our long-standing commitment to the dignity and rights of all people and formalized our practices to protect these rights. Our policy includes a commitment and process 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 policy and practices include a complete prohibition of child labor and forced labor, and the recognition that access to water is a fundamental human right. Our policy 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** and **Supplier Code of Conduct** further set 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 mandates adherence to these policies, which extend to our vendors, suppliers, contractors and partners through our written polices, 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.

We do not operate in government-designated cultural or heritage sites, or other protected areas where our operations would violate local laws intended to protect the long-term conservation of nature, associated ecosystems and cultural values. Per the Sustainability Accounting Standards Board (SASB) definitions, we do not have reserves in or near areas of conflict, in or near Indigenous land, or in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index.

Protecting Indigenous Rights

We carefully consider the impact of our business on the Indigenous people of the areas of the world where we operate. In Canada, where Indigenous people are members of the communities in which we operate, our actions are guided specifically by our **Indigenous Rights Policy**. When engaging and collaborating with Indigenous groups, Murphy respects 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. This includes operations near First Nations territory in British Columbia and Alberta.

In the future, as our global operations evolve and we expand our interactions with other Indigenous communities, we will modify our policy accordingly, to address any issues that may arise.

Grievance Reporting

We take our role as a responsible corporate citizen seriously and actively engage with various stakeholders as outlined in the Stakeholder Engagement section (see page 89). Concerns raised by any community stakeholder will be reviewed, investigated and resolved through our grievance mechanism which is overseen by our Corporate Compliance Officer. General concerns can be directed to our 24/7 Compliance Hotline (+1.877.808.1601) or **www.MyComplianceReport.com** (enter Access ID: MOC), both administered through an independent third party. Specific concerns can be directed to:

Royalty Owners and Community Stakeholders

US Toll Free: +1.888.475.2015

US Email: **owner_relations@murphyoilcorp.com**

Canada Toll Free: 1.888.999.0423

Human Rights and Indigenous Rights, and Employees

Compliance Hotline (24/7, third-party administered):

Telephone: +1.877.808.1601

Website: **www.MyComplianceReport.com**
(enter Access ID: MOC)

Compliance Officer: +1.281.675.9000

Investing in Our Communities

Giving back to our communities is a key tenet of who we are. We believe that we can make the most impact in communities where we live and work, and we prioritize our focus and efforts accordingly. We support our communities through strategic partnerships with organizations that work on developing communities, philanthropy and employee volunteerism. As members of the communities where we operate, our employees genuinely care about others, striving to be a force for good.

Community Economic Development and Workforce Capacity Building

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.

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 & 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. 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. For example, Murphy is a supporter of API's SkillsReady Program. SkillsReady is a job readiness program providing participants a four-month course covering practical industry knowledge. Murphy employees also participate in the API Opportunity@Work subcommittee promoting the hiring of non-degreed skilled personnel. By supporting initiatives like these, we are investing in our communities, while building a recruitment pipeline for our Company and industry.

Murphy executives volunteer on the boards of several industry, academic and nongovernmental organizations, including the API, TXOGA, Louisiana Mid-Continent Oil and Gas Association (LMOGA), Louisiana State University Foundation, Greater Houston Women's Chamber of Commerce, Greater Houston Partnership's Executive Women's Partnership, National Charity League, United Way Women's Initiative of Houston and Boy Scouts of America – Sam Houston Area Council.

> "We view our efforts to support local communities 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."

How We Support Our Communities

Strategic Partnerships

Philanthropy

Employee Volunteerism

Local Hiring
Where possible, 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 nationals of the local host country. When immediate talent is not available, we ensure proper training is offered. In 2022, the percentage of local nationals was 100% in Canada and 89% in Vietnam. In addition, Murphy actively contracts with local and Indigenous suppliers across various international regions where we operate, in accordance with local law.

Economic Impact
In addition to delivering a financial benefit to our stockholders, we provide economic support to communities where we operate, through direct and indirect employment, payments to landowners and tax revenues to local and federal jurisdictions.

2022 Economic Impact Highlights

$226 MILLION
Paid in Payroll, Incentives and Payroll Taxes

Essential jobs that support our employees, their families and communities in becoming more prosperous.

$959 MILLION
Paid in Royalty, Lease and Surface Payments

Royalty payments to landowners for their part in oil and natural gas production. Lease and surface payments benefit landowners for use of their land.

$91 MILLION
Paid in Taxes and Other Remittances[21] in Our Operating Jurisdictions

Tax revenues enable government agencies to improve local schools, infrastructure and social services and programs to support community development.

21 Includes income tax, sales, severance and ad valorem.

The El Dorado Promise

In addition to collaborating with industry groups, we also work directly to build community and workforce capacity. Our founder's son, Charles H. Murphy, Jr., believed that with good education, people are more productive, and that to educate people is good business. 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 Promise has spurred the college enrollment rate of El Dorado High School graduates to surpass state and national levels.

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.

The El Dorado Promise Impact Since 2007

more than **3,200** students have been placed in the El Dorado Promise scholarship program

163 colleges and universities in 36 states have accepted the graduates of El Dorado High School

Celebrating 16 Years of The El Dorado Promise

The El Dorado High School Class of 2023 held its Academic Signing Day ceremony in May 2023, with family, friends and guests in attendance. Speaking at the ceremony, Claiborne Deming, Chair of the Murphy Oil Corporation's Board of Directors, explained, "The impact of the El Dorado Promise is exactly what we intended, and that was to spark a renewed and increased interest in El Dorado students to achieve university-level work." Deming, who was present for the Promise's original announcement in January 2007, offered the Class of 2023 advice as they prepared to head out into the wider world. He noted that rarely in adult life are there no-strings attached opportunities, like the Promise. "It will change your life forever. It will change it constructively, positively and wonderfully, for you and your family," he added.

Source: El Dorado News-Times

Community Giving and Volunteering

For more than half a century, Murphy has been committed to giving and volunteering in our communities. In support of these efforts, we have built effective partnerships with educational, civic and charitable initiatives in the communities in which we operate. We focus on issues that will have the greatest impact for our local communities and employees while building on our long-standing commitment and legacy to educational endeavors. Some of our 2022 efforts include:

Education and Training

- Participated in the Read Across America program
- Partnered with Spring Branch Independent School District, Houston
- Participated in the Texas Diversity Council Summer Youth Program at Rice University
- Supported API SkillsReady and Opportunity@Work programs
- Sponsored school events in Carrizo Springs, Texas
- Continued commitment to the El Dorado Promise
- Provided scholarships to Fox Creek High School graduates in Canada

Aligned with these UN SDGs

Health and Well-Being

- Hosted wellness sessions for employees
- Volunteered at the Houston Food Bank
- Sponsored MS150 team to raise funds for the National Multiple Sclerosis Society's mission
- Hosted a blood drive for the Gulf Coast Regional Blood Center

Aligned with these UN SDGs

Civic and Community

- Financial contribution and volunteering efforts for United Way
- Volunteered for an Earth Day park beautification project in Houston
- Hosted Adopt-A-Beach at Galveston to clean up the shoreline
- Raised money for Women's Shelter in Carrizo Springs, Texas
- Financial commitment to the Louisiana Highway 1 Phase 2 Improvement Project

Aligned with these UN SDGs

Louisiana Highway 1 (LA 1) Phase 2 Improvement Project: Preserving an Energy Security, Economic and Safety Lifeline

Murphy pledged $300,000 over 2021 to 2025 to support the LA 1 highway improvement project. LA 1 is the only roadway supporting Port Fourchon, the United States' busiest intermodal energy port, the Louisiana Offshore Oil Port (LOOP) and Grand Isle. The project is critical to preserving safe, long-term access to the nation's energy supply, seafood production and vital coastal restoration projects. In addition, LA 1 is used for hurricane evacuation of local residents.

The contractor building the remaining 8.3 miles of elevated LA 1 highway to Port Fourchon is currently building a T-Wall in the South Lafourche Levee where the elevated portion will cross over the levee. The work on the levee will be done before hurricane season begins, providing a strengthened levee segment of 300 feet in length. The elevated highway is set to be complete and open in 2027. It will replace sections of old LA 1, which often has to be closed during hurricane or tropical storms, because the highway is submerged under storm surge waters. Each day that old LA 1 is closed costs the US $46 million in oil and natural gas production and $528 million in total GDP, according to the project's cost-benefit analysis.

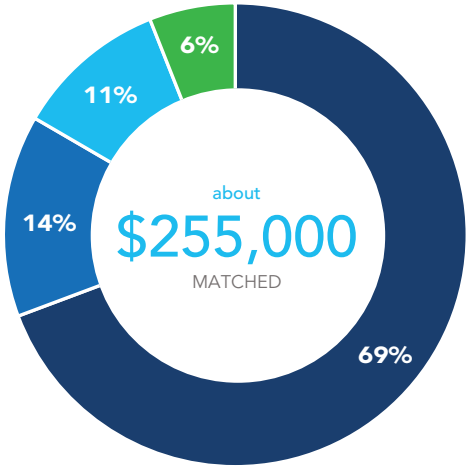
Source: LA 1 Coalition

Charitable Contributions

Each year, our Company makes contributions to various charities. In 2022, we distributed more than $650,000 to causes related to education, health and wellness, civic and community betterment, and others. In the last three years alone, more than $3 million was disbursed to address specific needs of our local communities.

Through our Employee Gift Matching Program, offered to employees and non-employee directors in the US, we match qualified donations on a dollar-for-dollar basis. The Company increases its match of contributions 2:1 for educational and health institutions. We have built a legacy of contributing to educational institutions and programs. In 2022, Murphy matched about $255,000 in gifts to 111 organizations.

Employee Gift Matching Donations in 2022



- Education
- Health and Human Services
- Civic and Community
- Culture and Arts

Our Long-Standing Partnership With United Way

Murphy employees annually participate in a campaign to raise funds and volunteer time for the United Way. Our 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 2022, Murphy's North America locations contributed over $363,000 to the local United Way through its employees' generosity and gift matching. Murphy is recognized as having achieved United Way of Greater Houston's 2022-2023 Chairman'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.

"We are so grateful to Murphy Oil Corporation for its ongoing support of our work through the annual campaign and their commitment to volunteerism.

Murphy employees spent 730 hours volunteering in our community this past year, including multiple United Way Days of Caring projects that brightened up greenspaces — and lives — in Greater Houston. Their generous support has also put them among our Chairman's Division donors for the past eight years.

Thank you, Murphy team, for your partnership and dedication to helping our Greater Houston neighbors land on their feet — and stay there!"

Amanda McMillian
President and Chief Executive Officer
United Way of Greater Houston

Employee Volunteerism

We recognize and support the positive impact our employees make. From volunteering as youth sports coaches to building homes and planting trees, to serving on city government commissions, school boards and chambers of commerce, Murphy employees enthusiastically give their time and talents, to strengthen their communities. In 2022, our employees and families volunteered more than 2,800 hours through Company-hosted events. In recognition of our 2022 voluntary efforts with the Houston Food Bank, we were awarded the United States President's Volunteer Service Award for the second consecutive year. Our President and Chief Executive Officer also received the Spindletop Award in recognition for his contributions and involvement in the energy industry and the community at large. In 2023, our Vice President, Investor Relations and Communication, was recognized as a Community Leader for the Year by the Greater Houston Women's Chamber of Commerce for her support of women and girls in their communities and the workplace.

Murphy receiving the President's Volunteer Service Award from the Houston Food Bank

Impact Stories

MAKING A DIFFERENCE WHERE IT MATTERS

Edgewood Elementary Partnership: Committing to Serving the Needs of Students and Teachers

With the relocation of our headquarters to the Spring Branch Independent School District (SBISD) in Houston, we were eager to build on and honor our strong legacy of championing educational causes. With more than 33,000 students, the SBISD student body is highly diverse – 73% minorities, 57% economically disadvantaged and 38% English learners. SBISD partnered Murphy with Edgewood Elementary to provide support throughout the school year, both monetarily and through employee volunteerism.

We initiated the partnership with a donation to the school to improve its fine arts program. Our employees participated in Reading Roundup, a Barbara Bush Houston Literacy Foundation program, to deliver high-quality read-alouds in first- and second-grade classrooms. Some of our other activities included sponsoring an appreciation luncheon for more than 80 staff members to ensure they feel valued and supported; hosting a book drive to provide students with a new or gently used book from a wish list prepared by the school to help them build their home library; and providing students taking standardized tests with a nutritious snack bag and an encouraging good luck card.

"We are so grateful to Murphy for their commitment and strategic support of Edgewood Elementary. A key tenet of SBISD's Good Neighbor program is the belief that our schools and our communities are inextricably linked, with each dependent on the success of the other," said Abby Walker, SBISD Director of Community Engagement. "We look forward to recognizing Murphy as a Good Neighbor, as the gifts of their time, talent and treasure will have an incredible impact on Edgewood students, staff and families this year and the years to come."

Eagle Ford Shale Operations: Responding to the Unique Needs of Our Communities

Our Eagle Ford Shale operations stretch across several counties in South Texas. Our employees in our three field offices are proud ambassadors of the Company and actively seek out opportunities to respond to the needs of their neighbors in these counties.

When the field staff heard that one of our own had family impacted by the Uvalde tragedy, they quickly mobilized to lend support to the affected community. While we do not have operations in Uvalde County, there is a very strong sense of community across the South Texas region. Employees collected groceries, donated blood and participated in raising $150,000 by selling brisket sandwiches at locations in the South Texas area. Other employees across the region organized a 5K run to raise funds for the families impacted by the tragedy.

Other community events in the Eagle Ford Shale area included sponsoring a back-to-school health fair to provide school supplies for over 600 school children in the Carrizo Springs Independent School District, supporting a local women's shelter, holding fundraisers for local causes, and participating in the National Night Out activities.

6 Governance and Responsible Business Practices

Board Diversity
30% by gender,
10% by ethnicity

ESG Metrics in Annual Incentive Plan
increased
from 15% to 20%

Stockholder Engagement
with nearly 50% ownership
in 2022

Our **Board of Directors and executive leadership team** are committed to sustainable business practices, which are premised on our Company's Purpose, Mission, Vision, Values and Behaviors. Murphy's executive leadership 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. Our Board is led by strong independent leadership in the form of an independent chair, and 90% of our directors are independent. Women chair 40% of our Board committees. Our Board has adopted governance practices that promote direct accountability to stockholders, including the annual election of each of our directors and the requirement to receive majority support.

Sustainability Governance

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

Board Expertise

As fiduciaries for stockholders, the Board believes it is important for directors to possess a diverse array of backgrounds, skills and achievements that are crucial to leading the Company in challenging times for the energy industry. Our directors' qualifications include experience in accounting/audit, business development and corporate strategy, climate, corporate governance, cybersecurity, finance/banking, government relations/public policy, law and risk management. The Board's diversity encompasses — among other elements — race, gender, age and experience. For more information on our Board, and to view a Skills, Qualifications and Diversity Matrix of its members, see our **2023 Proxy Statement**.

Executive Compensation

Sound compensation governance is a pillar of the corporate culture at Murphy. The Board's Compensation Committee and our executive leadership team continually seek to improve the alignment of our compensation programs with the interests of our stockholders, with industry developments and with our ESG goals. For over a decade, the Committee has included a safety metric in the Annual Incentive Plan (AIP) performance metrics, reflecting the Company's emphasis on safe operations by both employees and contractors. Each year, the Committee also includes a spill rate goal in the AIP ESG performance metrics, which highlights the Company's continued commitment to environmentally sound operations, including asset integrity.

Since 2021, to reinforce the Company's climate goals, the Committee has included a greenhouse gas (GHG) emissions intensity metric, for which aggressive goals must be achieved to earn a payout. In 2022, the Committee modified the AIP performance metrics to further emphasize cash flow and ESG goals. For example, we increased the weighting of the ESG metrics from 15% to 20%. 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.

Board of Directors Highlights[22]

90% Independent

Separate CEO and Chair

97% Average Stockholders' Vote Last 5 Years

20% Tenure of 5 Years or Less

30% Diverse by Gender

10% Diverse by Race/Ethnicity

80% Oil and Natural Gas Experience

30% Climate Experience

20% Cyber Experience

22 As of May 10, 2023.

Stakeholder Engagement

We view our stakeholders as important partners and actively engage with them regularly to share our strategy, goals and progress and to receive their feedback. Given the importance of stakeholder engagement to our Company, our Senior Vice President, General Counsel and Corporate Secretary and our Vice President, Investor Relations and Communications, oversee our robust engagement framework. Input from stakeholders helps to guide and improve our efforts in the short and long term.

A summary of our key stakeholder categories and details is listed below.

Stakeholders	Engagement Channels	Details
Stockholders	• Annual stockholder meeting • Equity conferences, debt conferences and investor non-deal roadshows • One-on-one investor discussions, including ESG-focused meetings	Our Approach to ESG, page 10 Stockholder Engagement, see below **2023 Proxy Statement** Contact our **Investor Relations team** Contact our **Corporate Secretary**
Employees	• Quarterly town hall meetings • Employee engagement surveys • Murphy Ambassador Program • Employee resource groups • Professional development programs • Wellness programs • Safety trainings and Safety Culture surveys • Ethics trainings and hotline	Investing in Our People, page 69 Building a Culture of Safety, page 64 **Worldwide Health, Safety and Environmental Policy** **Third-Party Ethics Hotline**
Suppliers and Contractors	• Assessments and engagement meetings • Quarterly Business Reviews • Reviews and audits • Safety trainings and Safety Culture surveys, and exercise drills • Monthly safety meetings • ISNetworld (ISN)	Building a Culture of Safety, page 64 Contractor Management, page 66 **Supplier Code of Conduct** **Worldwide Health, Safety and Environmental Policy**
Landowners, Indigenous Groups and Local Communities	• Designated grievance and resolution mechanisms for different parties, including Indigenous populations • Ongoing engagement with parties • Community outreach, volunteering efforts and philanthropy	Working With Communities, page 78 Investing in Our Communities, page 81 **Owner relations number and website** **Human Rights Policy** **Indigenous Rights Policy** **The El Dorado Promise Scholarship Program**
Government and Regulatory Agencies	• Participation in select health, safety and environmental (HSE) meetings, inspections and events • Legislative and regulatory engagement • Industry collaboration groups and trade associations	Health and Safety Certification and Audit, page 63 Public Advocacy, page 95
Others: Peers, Universities, NGOs	• Peer engagement through working groups, seminars and trade associations • Joint research programs • Outreach and partnership with NGOs	Industry Associations, page 95 Investing in Our Communities, page 81

Stockholder Engagement

We value the feedback and insights that we receive from our stockholders through ongoing dialogue. During 2022, we participated in 24 investor events and met with over 300 investors. In addition to regular discussions with stockholders regarding our financial results, members of our executive leadership team proactively engaged in discussions with institutional investors to solicit their input on the strengths and weaknesses of the Company's strategy, corporate governance, executive compensation and sustainability.

In 2022, we offered one-on-one discussions with our 25 largest institutional investors, who hold approximately 60% of the Company's outstanding shares. Investors, holding nearly 50% of the Company's outstanding shares, responded favorably to the opportunity to share their views and provided meaningful input. Their feedback was considered as part of our annual materiality assessment process – see page 12 for details on the process and outcomes.

For more information on our stockholder engagement process and our responsive program changes in recent years, including 2022, please see our **2023 Proxy Statement**.

Responsible Business Practices

Enterprise Risk Management

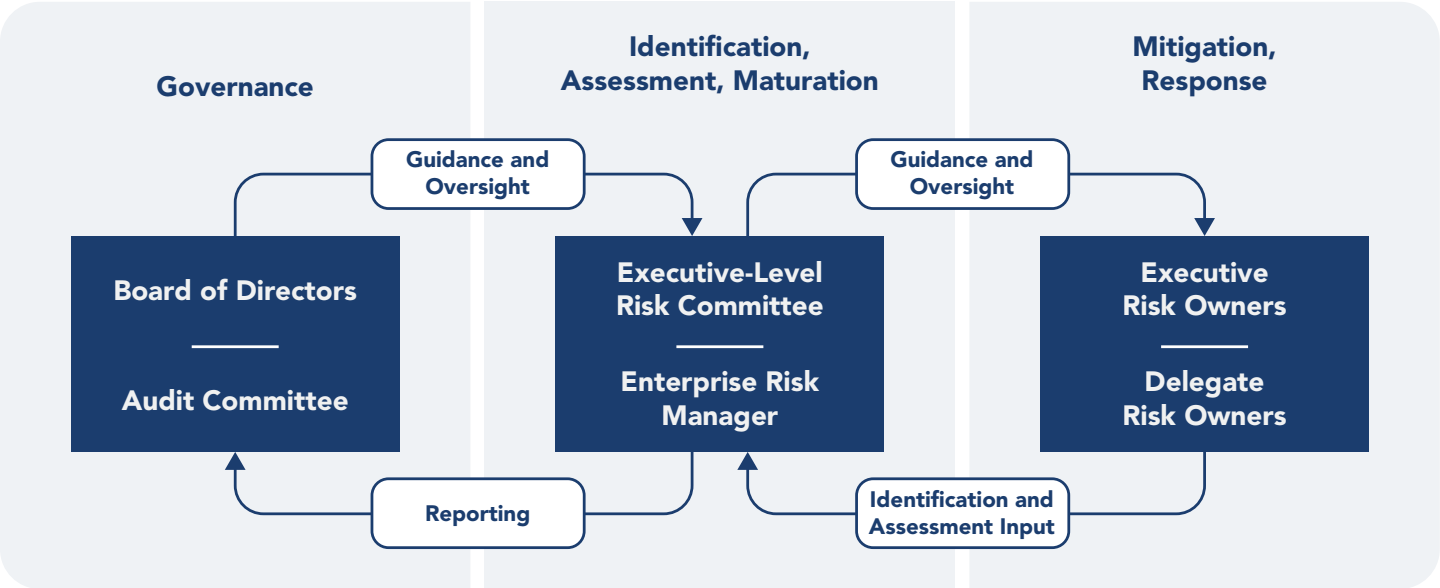
Our annual Enterprise Risk Management (ERM) process is run with the goal of integrating risk awareness and mitigation at all levels of the organization, from strategy to planning, execution, operations, partnering and financing. Our process covers major categories of uncertainty, including risks to our business model, finances, operational performance, environmental outcomes, regulatory compliance and reputation.

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 and, annually, to the full Board. In return, the manager and committee receive direction on processes and priorities from the Audit Committee and the Board.

Enterprise Risk Management



Cybersecurity

Murphy has a dedicated Information Technology (IT) group that oversees technology infrastructure, cybersecurity and digital innovation, with a focus on 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, safety of our IT applications, systems and data is a key component of our Enterprise Risk Management framework.

Cybersecurity Risk Management

Murphy's Cybersecurity Risk Management framework (see below) forms the foundation of the Company's Enterprise Cybersecurity Program and helps foster strong governance and a culture of security awareness.

Cybersecurity Risk Management Framework

Murphy Cybersecurity Risk Management framework consists of:

Cybersecurity Governance – Murphy's security culture starts at the top. Our Audit Committee of the Board, President and Chief Executive Officer and executive leadership team receive cybersecurity briefings at least annually. This enhanced visibility, in turn, allows the Board and executive leadership team to make timely, data-driven decisions ensuring that Murphy, its employees, investors and partners are adequately protected.

Risk Management Strategy – IT and Business leadership, in consultation with strategic partners, have defined a unified Risk Management strategy, which focuses on People, Process and Technology, as per the table on the next page.

Cyber Readiness – Assessing our cyber readiness is an integral part of Murphy's Cybersecurity Risk Management program. We actively engage the Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA), our internal and external auditors, and managed security service providers (MSSPs) to perform regular security audits, vulnerability assessments, cyberthreat simulations and network architecture reviews. These evaluations allow us to continuously measure against industry best practices and improve our digital security posture.

23 FBI: Federal Bureau of Investigation; ONG-ISAC: Oil and Gas Information Sharing and Analysis Center

Risk Management Strategy

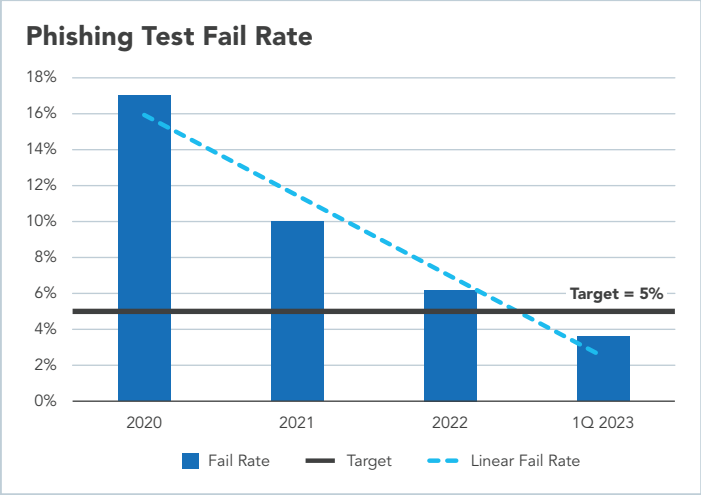
Technology	People	Process
Murphy utilizes industry-leading technologies that focus on continuous monitoring and analytics built on advanced machine learning and artificial intelligence, to safeguard against sophisticated cyberattacks. Deployed technologies include Next-Gen Firewalls, advanced endpoint and email protection, multifactor authentication (MFA) and Managed Detection and Response (MDR).	All Murphy personnel are required to complete cybersecurity training annually and have access to an ever-evolving catalog of over 200 cybersecurity courses. We have established communication channels to engage and educate our users on best practices, security guidelines and preventative measures to safeguard against cyberthreats.	Murphy's cybersecurity framework is aligned with industry-recognized standards such as the NIST 800 series and ISO 27000 series and provides the foundation for developing and integrating best-in-class cyber hygiene across all key business and operational processes. Continuous engagement with our internal and external stakeholders underpins our efforts to prevent and detect cybersecurity breaches.
In response to the increasing threat climate, Murphy further enhanced security of its devices in 2022 by aligning protection of removable media, browsers, remote access protocols and admin tools, in line with the hardened National Institute of Standards and Technology (NIST) and International Organization for Standardization (ISO) standards.	Murphy IT employs an industry-leading security awareness and education platform to assess our users' vigilance toward social engineering attacks, such as phishing and Business Email Compromise (BEC), on an ongoing basis and auto-enrolls high-risk users in targeted awareness-training campaigns.	Murphy has forged strong partnerships with the Department of Homeland Security (DHS), FBI, ONG-ISAC and numerous top security companies. We routinely engage with these partners to discuss emerging cyberthreats and adversaries. These collaborations provide Murphy insights into oil and natural gas industry specific threat intelligence, enabling us to adjust our response controls.
We ensure our business-critical systems are available 24/7/365, by employing a proactive disaster avoidance strategy that focuses on resilience, in addition to recovery. By building effective redundancy in our business-critical systems, we have reduced the recovery time of these systems and mitigated adverse business risks.	Our security professionals recognize the criticality of remaining up to date on emerging threats, breaches and cyber risks. One hundred percent of employees working on the Murphy cybersecurity team have earned and maintained industry-related certifications in 2023.	With the business need for rapidly evolving skills and technologies, we understand the importance of engaging service organizations to remain competitive. Murphy holds these service providers to a high standard and routinely reviews auditor-issued reports on the design and effectiveness of these service organizations' control activities.

Recent Accomplishments and Upcoming Developments

Each year, Murphy's IT department aims to improve end user productivity, enable the business and enhance security, by implementing various strategic high-value-add projects. For 2022 and 2023, Murphy IT focused on response, recovery and enhanced cyber readiness, by:

- **Reducing phishing test fail rate by 80%** – Phishing attacks continued to be a dominant threat fueling ransomware attacks in 2022. As a result, with support from executive leadership and a renewed commitment from the Cybersecurity team, we achieved over an 80% reduction in the number of users failing phishing tests from 2020 to the first quarter of 2023. We did so by testing our users more frequently, providing more awareness training options and building a phishing dashboard for increased visibility and awareness.
- **Testing cyber incident response capabilities effectively across the Company** – We successfully conducted multiple cyber drills to assess Murphy's Cyber Incident Response Plan and personnel readiness across various functions involving executive management (including the Chief Executive Officer), key operations personnel and our MSSPs. These drills were designed to invoke realism and included participation from Legal, outside counsel, Communications, Human Resources and other business functions.
- **Implementing around the clock protection** – We deployed a 24/7/365 enhanced monitoring and remediation service to quickly respond to and contain cyber threats.
- **Building the foundation for a world-class Threat Intelligence Program** – We made a significant strategic investment to upgrade our threat intelligence capabilities, by partnering with a leading security service provider. This greatly enhanced the quality of threat intelligence we receive, resulting in more effective threat-hunting capabilities, to proactively identify unknown and undetected threats.
- **Expanding security coverage** – By utilizing enhanced threat Intelligence and Machine Learning (ML) in threat detection, we deployed low-noise, high-fidelity detection capabilities, allowing us to expand our monitoring coverage while reducing the log data analyzed.
- **Securing remote access** – We enabled multifactor authentication to provide an additional layer of defense and a higher degree of identity assurance.
- **Strengthening dark web reconnaissance, using bots** – We implemented bots to perform automated dark web scans and notify end users of any identified compromised sensitive data, such as login credentials.

In 2023, we have continued to promote cyber hygiene, educate and test our users, and further develop our detection, response and cyber-readiness capabilities.



Murphy's **Managed Extended Detection and Response (MXDR)** solution ingests and analyses over 400 million logs weekly.

Over the last three years (as of July 2023), Murphy has not experienced any material impacts to our business, operations or reputation related to known cybersecurity attacks or other security related incidents, including incurring any material expenses or the payment of any penalties or settlements. However, we recognize cyberthreats are constantly evolving and we are committed to cultivating a culture of security, remaining vigilant and continually improving our cybersecurity environment and controls.

Ethical Business Conduct

The Murphy **Code of Business Conduct and Ethics** (Code of Business Conduct) provides 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.

We are committed to human rights and Indigenous rights and have published these 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 77).

Ethics Training and Reporting

The Code of Business Conduct applies to all directors, executives 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. Individuals either hired as employees or engaged as a contractor are required to complete training on the Code of Business Conduct, as well as specific training regarding topics including anti-bribery and corruption, ethics and anti-harassment. In 2022, we published a comprehensive **Supplier Code of Conduct**, which is discussed on page 96.

Our executive leadership team is trained on and expected to adhere to an **enhanced standard** of compliance with the rules that impose additional expectations regarding their conduct.

We take violations of our policies seriously and inform employees that it is their duty to report suspected violations. Employees are encouraged to report infractions of the Code of Business Conduct and can do so anonymously through a third-party ethics hotline. Employees may contact the Company's Corporate Compliance Officer or the Audit Committee of the Board directly for any matter regarding the Code of Business Conduct including those involving accounting, internal accounting or auditing matters. Our policy and process is designed to prevent retaliation against anyone that submits an inquiry or report regarding compliance with the Code of Business Conduct. We assure employees that there will be no retaliation for reporting suspected problems in good faith, and those who retaliate will face disciplinary action. Our auditors periodically conduct audits to ensure internal compliance with the Code of Business Conduct, and the results of these audits, as well as statistics regarding reports and their resolution, are reported to the Audit Committee.

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 Chief Executive Officer 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.

We regularly monitor the hotline and other reports of potential misconduct and address them consistently, promptly and thoroughly. We have structures in place to process whistleblower reports; specifically, we investigate violations of any of these standards and, when necessary, apply disciplinary or corrective action.

Committed to Ethics

The Code of Business Conduct 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 stockholders 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.

The Code of Business Conduct 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** and an internal Gifts and Entertainment Policy. A detailed definition of what is considered bribery and corruption is outlined on the first page of the 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. We review 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 stockholders.

Murphy is currently a member of the following industry trade associations and initiatives: the American Petroleum Institute, Canadian Association of Petroleum Producers, Center for Offshore Safety, Environmental Partnership, Greater Houston Partnership, HWCG, 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 exactly with those of 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.

Supply Chain Management

Our suppliers are critical to the success and delivery of our operational goals. In 2022, we procured approximately $1.6 billion in commercial goods and services from over 1,900 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.

We strive to conduct all contracting and procurement activities in an ethical manner, in accordance with our Procurement Policy and applicable laws. 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.

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 competence
- 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 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.

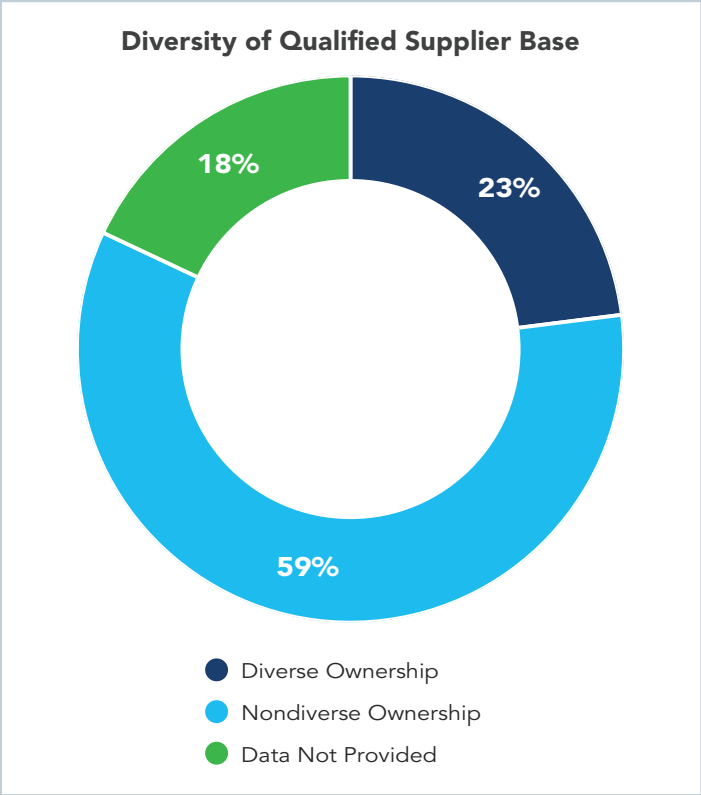
Based on questionnaires completed by approximately 900 of our qualified North American vendors in 2022, 23% of our suppliers reported having some level of diverse ownership within their organization (qualified as being minority-, women-, veteran-, LGBTQ-owned or designated as a small business owner by the US Small Business Administration).

In 2022, the ESG data we collect from suppliers included acknowledgment of internal supplier policies relating to a range of sustainability topics. Some highlights include:

- A majority of our qualified suppliers report having both formal human rights and diversity, equity and inclusion policies in place
- 83% of our qualified vendor base report having an internal Code of Conduct for their employees
- 87% report also having a workplace anti-discrimination policy

Additionally, to further emphasize robust ethical standards across our supply base, in 2022, Murphy published a comprehensive **Supplier Code of Conduct** to which we require all our business partners to adhere. This Supplier Code of Conduct ensures that all our various suppliers, including security contractors, are held to the same ethical standards as those required of Murphy personnel in Murphy's own internal **Code of Business Conduct and Ethics** and **Human Rights Policy**. In addition to publicly publishing the Supplier Code of Conduct, we also require that all qualified suppliers provide an annual acknowledgment of the code via our ISNetworld portal for tracking purposes, and we will be expanding our compliance audits to include various ESG topics related to the code.

We believe that Murphy and our business partners holding each other mutually accountable to high ethical standards will help ensure that all parties strive to observe Murphy's ideal of "Do Right Always."



7 Performance Data and Assurance

Performance Data

	Units	2022	2021	2020	2019	2018
Greenhouse Gas (GHG) Emissions						
Operated Scope 1 Emissions	metric ton CO_2e	1,056,513	925,239	1,002,338	1,219,971	2,174,224
Operated Scope 1 Emissions From Flared Hydrocarbons	metric ton CO_2e	224,617	238,139	308,754	484,701	1,108,320
Operated Scope 1 Emissions From Other Vented Emissions	metric ton CO_2e	99,485	87,100	126,961	125,188	112,065
Operated Scope 1 Emissions From Combustion	metric ton CO_2e	697,810	569,976	536,777	576,871	807,735
Operated Scope 1 Emissions From Process Emissions	metric ton CO_2e	6,907	7,146	6,980	7,965	7,617
Operated Scope 1 Emissions From Fugitive Emissions/Leaks	metric ton CO_2e	27,694	22,878	22,867	25,247	138,487
Operated Scope 1 Emissions by Source						
Flaring/Venting	%	30.7%	35.2%	43.5%	50.0%	56.1%
Fuel Combustion	%	66.1%	61.6%	53.6%	47.3%	37.2%
Other	%	3.3%	3.3%	3.0%	2.7%	6.7%
Operated Scope 1 Emissions From Methane	%	14.7%	15.0%	18.0%	16.2%	16.2%
Operated Scope 1 Emissions Covered Under a Regulatory Program	%	6.7%	6.5%	7.3%	6.0%	
Operated Scope 2 Emissions[1]	metric ton CO_2e	31,707	42,028	33,974	30,349	51,499
Global Net Equity Scope 3 Emissions (Category 11: Use of Sold Products only)	metric ton CO_2e	21,900,000	20,600,000	21,500,000		

1 Electrical usage emissions factors for 2022: US: eGRID (2021), Canada: National Inventory Report to UN IPCC (1990-2020); Pre 2022: US: Ecometrica (2011), Canada: National Inventory Report to UN IPCC (1990-2011).

Emissions Intensities						
GHG Emissions Intensity *(Total Scope 1 + Scope 2 Emissions) ÷ Gross Operated Production*	metric ton CO_2e/ MMBOE	12,151	12,950	12,809	16,234	25,912
Total Scope 1 + Scope 2 Emissions	metric ton CO_2e	1,088,220	967,267	1,036,312	1,250,320	2,225,724
Methane Intensity *Methane Released ÷ Methane Produced*	%	0.20%	0.21%	0.27%	0.27%	0.32%
Methane Intensity *Amount of Operated Global Scope 1 Methane Emissions ÷ Gross Operated Production*	metric ton CO_2e/ MMBOE	1,692	1,852	2,228	2,564	4,111
Flaring Intensity *Flaring Volume ÷ (Gross Operated Production x 10^6)*	Mcf/BOE	0.03	0.03	0.05		
Flaring Volume (Routine and Non-Routine)	Mcf	2,473,440	2,469,638	3,724,796		
Flaring Intensity *Amount of Operated Global Scope 1 Emissions from Flared Hydrocarbons ÷ Gross Operated Production*	metric ton CO_2e/ MMBOE	2,508	3,188	3,816	6,293	12,904

	Units	2022	2021	2020	2019	2018
Emissions Intensities (cont.)						
% of Produced Gas Flared *Flaring Volume ÷ Gross Operated Natural Gas Produced*	%	1.2%	1.4%	2.0%		
Gross Operated Natural Gas Produced	Mcf	211,395,330	182,932,176	183,586,483		
Gross Operated Production	MMBOE	89.56	74.69	80.91	77.02	85.89

Energy and Electrical Power Use						
Total Energy Use	Gigajoules	13,198,209	10,730,532	9,967,813		
Total Energy from Renewable Sources	Gigajoules	68,776	48,206	46,590		
Total Energy from Renewable Sources	%	0.5%	0.4%	0.5%		
Total Energy from Non-Renewable Sources	Gigajoules	13,129,435	10,682,326	9,921,223		
Total Energy from Non-Renewable Sources	%	99.5%	99.6%	99.5%		
Total Energy Use from Renewable Sources at Corporate	Gigajoules	17,266	17,666	7,203		
Total Energy Use from Renewable Sources at Operations/Field Sites	Gigajoules	51,509	48,206	46,590		
Total Energy Use from Non-Renewable Sources at Corporate	Gigajoules	50,443	51,612	21,044		
Total Energy Use from Non-Renewable Sources at Operations/Field Sites	Gigajoules	13,078,992	10,613,049	9,892,976		
Total Energy Intensity	Gigajoules/ BOE	0.15	0.14	0.12		
Total Energy from Grid	%	2.1%	2.5%	2.2%		
Total Electrical Power Use	MWh	77,504	74,156	59,992		
Total Electrical Power Derived from Renewable	MWh	19,105	18,298	14,943		
Total Electrical Power Derived from Non-renewable	MWh	58,399	55,857	45,049		
Total Electrical Power Use at Corporate	MWh	18,809	19,244	7,847		
Total Electrical Power Use at Operations/Field Sites	MWh	58,695	54,911	52,145		
Total Electrical Power Use from Renewable Sources at Corporate	MWh	4,796	4,907	2,001		
Total Electrical Power Use from Renewable Sources at Operations/Field Sites	MWh	14,309	13,391	12,942		
Total Electrical Power Intensity	kWH/BOE	0.87	0.99	0.74		

	Units	2022	2021	2020	2019	2018
Air Quality						
Nitrogen Oxide (NO_X) Emissions	metric tons	2,868	2,831	2,848	3,196	2,667
Sulfur Dioxide (SO_2) Emissions	metric tons	510	537	553	798	547
Volatile Organic Compounds (VOCs) Emissions	metric tons	3,068	2,080	2,236	2,368	2,638
Particulate Matter (PM_{10}) Emissions	metric tons	217	222	265	307	236

Onshore Operations Water Management						
Total Fresh Water Withdrawn	thousand cubic meters	1,180	1,284	2,396	5,268	4,923
Groundwater	thousand cubic meters	386	308	770	3,768	2,189
Municipal	thousand cubic meters	0	0	0	0	0
Surface Water	thousand cubic meters	794	975	1,626	1,500	2,733
Total Fresh Water Consumed	thousand cubic meters	1,258	1,105	1,810	5,151	4,360
Groundwater	thousand cubic meters	459	234	770	3,601	2,292
Municipal	thousand cubic meters	0	0	0	0	0
Surface Water	thousand cubic meters	800	871	1,040	1,550	2,067
Total Fresh Water Withdrawn in Regions with High or Extremely High Baseline Water Stress	%	0%	0%	0%	0%	0%
Total Fresh Water Consumed Intensity *Freshwater Consumed ÷ Number of Wells Completed in That Year*	thousand cubic meters per well completion	25	30	46	49	51
Number of Wells Completed in that Year	#	50	37	39	105	86
Total Water Consumed for Murphy Operations (Fresh Water and Recycled Water)	thousand cubic meters	1,729	1,331	1,895	5,412	4,534
Produced Water Recycled for Murphy Operations	thousand cubic meters	471	226	85	261	174

	Units	2022	2021	2020	2019	2018
Onshore Operations Water Management (cont.)						
Produced Water Recycled for Murphy Operations and Other Operators	thousand cubic meters	585	241	85	280	196
Total Recycled Water (Consumed by Murphy and Other Operators) of Total Water Consumed	%	33.8%	18.1%	4.5%	5.2%	4.3%
Volume of Produced Water and Flowback Generated	thousand cubic meters	1,535	1,592	932	1,887	1,784
Produced Water and Flowback Discharged	%	0%	0%	0%	0%	0%
Produced Water and Flowback Injected[2]	%	65.5%	83.5%	84.9%	84.4%	90.3%
Produced Water and Flowback Recycled (Including Water Shared with Other Operators)[2]	%	38.1%	15.1%	9.1%	14.9%	11.0%
Hydrocarbon Content in Discharged Water	metric tons	0	0	0	0	0
Hydraulically Fractured Wells for Which There Is Public Disclosure of All Fracturing Fluid Chemicals Used	%	100%	100%	100%	100%	100%
Hydraulic Fracturing Sites Where Ground or Surface Water Quality Deteriorated Compared to a Baseline	%	0%	0%	0%	0%	0%

2 Data may not add to 100% exactly, due to: calendar year of water generation versus use, evaporation and pond bottom levels.

Offshore Operations Water Management						
Produced Water Discharged to Sea	thousand cubic meters	1,315	1,227	841	650	
Hydrocarbon Concentration[3]	mg/L	8.07	9.62	13.16	13.93	
Hydrocarbon Content in Produced Water Discharged to Sea	metric tons	10.61	11.80	11.07	9.05	

3 US EPA regulatory limit is 29 mg/L.

Waste Management						
Total Waste Generated (Solid and Semi-Solid)	metric tons	108,841	72,916	94,588		
Non-Hazardous Wastes	metric tons	108,023	71,696	94,552		
Hazardous Wastes[4]	metric tons	818	1,220	36		

4 The significant year-over-year change in hazardous waste volume in 2021 is attributable to classification change based on waste type in Canada.

	Units	2022	2021	2020	2019	2018
Spills[5], Biodiversity Impact, Critical Incident Risk Management and Other Metrics						
Hydrocarbon Spills (Same as Number of Hydrocarbon Spills)	#	0	0	4	1	5
Hydrocarbon Spills (Same as Aggregate Volume of Hydrocarbon Spills)	barrels	0	0	81	83	380
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	0	0	
Volume Recovered	barrels	0	0	54	0	
Proved Reserves in or Near Sites With Protected Conservation Status or Endangered Species Habitat (per Sustainability Accounting Standards Board, or SASB)	%	1%	1%	1%	1%	
Probable Reserves in or Near Sites With Protected Conservation Status or Endangered Species Habitat (per SASB)	%	N/A	N/A	N/A	N/A	
Process Safety Events (PSE) for Loss of Primary Containment (LOPC) of Greater Consequence (Tier 1)	#	5	5	3	5	9
PSE Rates for LOPC of Greater Consequence (Tier 1)	per 200,000 work hours	0.14	0.20	0.12	0.10	0.15
Environmental Fines and Penalties (Operated)	$ thousand	0	25	0		

5 Spill event ≥ 1 BBL and outside of containment.

Safety						
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	0.37	0.28	0.28	0.52	0.40
TRIR, Employees	per 200,000 work hours	0.26	0.13	0.12	0.35	0.21
TRIR, Contractors	per 200,000 work hours	0.40	0.36	0.36	0.57	0.45
Near-Miss Frequency Rate, Employees + Contractors	per 200,000 work hours	1.16	1.30	2.14	1.40	1.43

	Units	2022	2021	2020	2019	2018
Safety (cont.)						
Near-Miss Frequency Rate, Employees	per 200,000 work hours	1.53	1.54	2.34	1.50	1.86
Near-Miss Frequency Rate, Contractors	per 200,000 work hours	1.06	1.19	2.05	1.37	1.29
Lost Time Incident Rate (LTIR), Employees + Contractors	per 200,000 work hours	0.03	0.04	0.08	0.08	0.15
LTIR, Employees	per 200,000 work hours	0.13	0.00	0.12	0.09	0.14
LTIR, Contractors	per 200,000 work hours	0.00	0.06	0.06	0.08	0.16
Average Hours of Health, Safety and Emergency Response Training, Employees (Based on Total Employee Count as of Year-End)	per total number employees	17	6	15	14	
Average Hours of Health, Safety and Emergency Response Training, Contractors (US-Based Only)	per total number contractors	22	19	13	18	
Preventable Vehicle Incident Rate (Employee and US Onshore Only)	per million miles driven	2.21	1.72	1.24	1.43	1.78

Employee Diversity, Equity and Inclusion[6,7]						
Employee Workforce Metrics						
Employee Count (Total Company)	#	691	696	675	823	1,108
Median Age	years	42	43	42	43	42
Employee Turnover (Voluntary)	%	11%	6%	6%	10%	8%
Representation of Women (US and International)						
Executive and Senior-Level Managers	%	16%	12%	12%	14%	16%
First- and Mid-Level Managers	%	22%	18%	17%	22%	20%
Professionals	%	35%	34%	34%	34%	36%
Other (Administrative Support and Field)	%	5%	7%	7%	20%	20%
Total	%	21%	21%	21%	27%	28%
Representation of Minorities (US-Based Only)						
Executive and Senior-Level Managers	%	26%	18%	12%	9%	8%
First- and Mid-Level Managers	%	26%	22%	23%	24%	24%
Professionals	%	39%	34%	33%	29%	25%
Other (Administrative Support and Field)	%	30%	31%	31%	36%	32%
Total	%	33%	30%	30%	29%	27%

6 2018 data includes employees in Malaysia.

7 The employee count reduction in 2020 is primarily driven by El Dorado, Arkansas, and Calgary, Canada, office closures.

	Units	2022	2021	2020	2019	2018
Employee Training						
Average Training Time per Employee (Based on Total Employee Count as at Year-End)	hours	19				
Average Training Time per Office Employee	hours	9				
Average Training Time per Field Employee	hours	32				
Total Average Training Spend per Employee (Based on Total Employee Count as at Year-End)	$	1,116				
Average Training Spend per Office Employee	$	873				
Average Training Spend per Field Employee	$	1,451				

Security, Human Rights, Rights of Indigenous People and Community Relations (per SASB)						
Proved Reserves in or Near Areas of Conflict	%	0%	0%	0%	0%	
Probable Reserves in or Near Areas of Conflict	%	N/A	N/A	N/A	N/A	
Proved Reserves in or Near Indigenous Land[8]	%	0%	0%	0%	0%	
Probable Reserves in or Near Indigenous Land[8]	%	N/A	N/A	N/A	N/A	
Number of Nontechnical Delays	#	0	0	0	0	
Duration of Nontechnical Delays	days	0	0	0	0	

8 Murphy identifies Canadian Indigenous lands as reserve lands held by the Crown, and as guided by SASB standards.

Reserves Valuation and Capital Expenditures						
Amount Invested in Renewable Energy	$	0	98,570	7,200	53,000	
Revenue Generated by Renewable Energy Sales	$	0	0	0	0	

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

API Template 2.0 for GHG Reporting

This voluntary Template is intended for individual company use. API will not be aggregating data reported by individual companies or compiling individual company reporting.

General	
Date:	July 31, 2023
IPCC AR GWP:	AR4
Basis:	Operational Control

No.	Indicator	Units	2021	2022	Comments
1. Direct GHG Emissions (Scope 1)					
1.1	Direct GHG Emissions (Scope 1) – All GHGs	million metric tons CO_2e	0.93	1.06	
1.1.1	Upstream – All GHGs	million metric tons CO_2e	0.93	1.06	
1.1.1.1	CH4	million metric tons CO_2e	0.14	0.16	
1.1.1.2	Upstream Flaring (All GHGs; subset of Scope 1)	million metric tons CO_2e	0.24	0.22	
1.1.1.3	Volume of Flares	MMcf	2,470	2,473	
1.1.2	Midstream – All GHGs	million metric tons CO_2e	N/A	N/A	
1.1.2.1	CH4	million metric tons CO_2e	N/A	N/A	
1.1.3	Downstream – All GHGs	million metric tons CO_2e	N/A	N/A	
1.1.4	LNG – All GHGs	million metric tons CO_2e	N/A	N/A	
1.1.5	Oil and Natural Gas Field Services – All GHGs	million metric tons CO_2e	N/A	N/A	
2. Indirect GHG Emissions from Imported Energy (Scope 2)					
2.1	Indirect GHG Emissions from Imported Electricity + Heat + Steam + Cooling (Scope 2, Market-Based)	million metric tons CO_2e	0.04	0.03	Our Scope 2 utilizes location-based method
2.1.1	Upstream – All GHGs	million metric tons CO_2e	0.04	0.03	
2.1.2	Midstream – All GHGs	million metric tons CO_2e	N/A	N/A	
2.1.3	Downstream – All GHGs	million metric tons CO_2e	N/A	N/A	
2.1.4	LNG – All GHGs	million metric tons CO_2e	N/A	N/A	
2.1.5	Oil and Natural Gas Field Services – All GHGs	million metric tons CO_2e	N/A	N/A	
3. GHG Mitigation					
3.1	GHG Mitigation from CCUS, Credits and Offsets	million metric tons CO_2e	N/A	N/A	
3.1.1	Carbon Capture Utilization or Storage (CCUS) – All GHGs	million metric tons CO_2e	N/A	N/A	
3.1.2	Renewable Energy Credits – (RECs for Indirect Emissions) – All GHGs	million metric tons CO_2e	N/A	N/A	
3.1.3	Offsets – All GHGs	million metric tons CO_2e	N/A	N/A	

No.	Indicator	Units	2021	2022	Comments
4. GHG Emissions Intensity					
4.1	Scope 1 + Scope 2 Upstream GHG Intensity	kilograms CO_2e/BOE	12.95	12.15	
4.2	Scope 1 Upstream Methane Intensity	kilograms CO_2e/BOE	1.85	1.69	
4.3	Scope 1 Upstream Flaring Intensity	kilograms CO_2e/BOE	3.19	2.19	
4.4	Scope 1 + Scope 2 Liquids Pipelines Transmission GHG Intensity	million metric tons CO_2e/ throughput in barrel-miles	N/A	N/A	
4.5	Scope 1 Natural Gas Pipelines Transmission & Storage Methane Intensity	%	N/A	N/A	
4.6	Scope 1 + Scope 2 Downstream GHG Intensity	kilograms CO_2e/BOE	N/A	N/A	
4.7	Scope 1 + Scope 2 LNG GHG Intensity	million metric tons CO_2e/ MMcf	N/A	N/A	
4.8	Additional Intensity Metrics, if applicable (e.g., further disaggregated by constituent GHG or by more granular business asset, and/or for additional business assets beyond these categories)	No			
5. Indirect GHG Emissions From Consumers' Use of Products (Scope 3)					
Attention: Scope 3 emissions from the use of sold products are released when the hydrocarbons produced and marketed by natural gas and oil companies are combusted by consumers. GHG emissions from the use of sold products are not within a company's control, and it should be noted that not 100% of the hydrocarbon products produced/refined/sold by the company may be combusted at the end of the product lifecycle. Scope 3 emissions lead to extensive multiple counting of GHG emissions across the economy. Therefore, it is inaccurate to add together Scope 3 emissions reported by individual companies in order to ascertain GHG emissions from consumers' use of oil and natural gas products. For example, an oil and natural gas company's Scope 3 emissions represent Scope 1 and/or Scope 2 emissions for fuel consumers (e.g., electric utility combusting natural gas, individuals using gasoline, manufacturers purchasing natural gas to power their operations). Scope 3 emissions on an individual company basis are not an indicator whether global GHG emissions are being reduced and do not provide context of how GHG emissions fit within the global energy system. Scope 3 emissions are also not indicative of a company's strategy to manage potential climate risks and opportunities nor of a company's commercial strategy or viability.					
5.1	Indirect GHG Emissions From Use of Sold Products (Category 11)	million metric tons CO_2e	20.6	21.89	See page 27 for details
6. Additional Climate-Related Targets and Reporting					
6.1	GHG Reduction Target(s)	Yes			Murphy Oil Corporation 2023 Sustainability Report, page 18
6.2	TCFD-informed reporting	Yes			Murphy Oil Corporation 2023 Sustainability Report, page 19
6.3	Additional Climate Reporting Resources				Murphy Oil Corporation 2023 Sustainability Report, Content Indices, page 109
7. Third-Party Verification					
7.1	Assurance Level		Limited assurance engagement	Limited assurance engagement	Murphy Oil Corporation 2023 Sustainability Report, page 107
7.2	Assurance Provider		ERM CVS	ERM CVS	

Independent Limited Assurance Report to Murphy Oil Corporation

ERM Certification & Verification Services Incorporated ("ERM CVS") was engaged by Murphy Oil Corporation ("Murphy Oil") to provide limited assurance in relation to the information set out below and presented in Murphy Oil's 2023 Sustainability Report (the "Report").

Engagement summary	
Scope of our assurance engagement	Whether the 2022 data for the following selected indicators are fairly presented within the Report, in all material respects, in accordance with the reporting criteria for assets **under Murphy Oil's operational control**: • Total Scope 1 GHG emissions [metric tons CO_2e] • Total Scope 2 GHG emissions (location-based method) [metric tons CO_2e] • Total Scope 1 Carbon dioxide (CO_2) emissions [metric tons CO_2e] • Total Scope 1 Methane (CH_4) emissions [metric tons CO_2e] • Total Scope 1 Nitrous oxide (N_2O) emissions [metric tons CO_2e] • Total GHG emissions (Scope 1 and Scope 2 by location-based method) [metric tons CO_2e] Our assurance engagement does not extend to information in respect of earlier periods or to any other information included in the Report.
Reporting period	January 1, 2022 to December 31, 2022
Reporting criteria	• WRI/WBCSD's Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004, as updated in 2015) • US EPA Mandatory Greenhouse Gas Reporting Rule • Murphy Oil's internal reporting criteria and definitions
Assurance standard and level of assurance	We performed a limited assurance engagement, in accordance with the International Standard on Assurance Engagements ISAE 3000 (Revised) 'Assurance Engagements other than Audits or Reviews of Historical Financial Information' issued by the International Auditing and Standards Board. The procedures performed in a limited assurance engagement vary in nature and timing from and are less in extent than for a reasonable assurance engagement and consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.
Respective responsibilities	Murphy Oil is responsible for preparing the Report and for the collection and presentation of the information within it, and for the designing, implementing, and maintaining of internal controls relevant to the preparation and presentation of the Report. ERM CVS' responsibility is to provide conclusions to Murphy Oil on the agreed scope based on our engagement terms with Murphy Oil, the assurance activities performed and exercising our professional judgement.

Our conclusion

Based on our activities, as described overleaf, nothing has come to our attention to indicate that the 2022 data and information for the disclosures listed under 'Scope' above are not fairly presented in the Report, in all material respects, in accordance with the reporting criteria.

Our assurance activities

Considering the level of assurance and our assessment of the risk of material misstatement of the Report a multi-disciplinary team of sustainability and assurance specialists performed a range of procedures that included, but was not restricted to, the following:

- Evaluating the appropriateness of the reporting criteria for the Report.
- Interviews with management representatives responsible for managing the selected issues.
- Interviews with relevant staff to understand and evaluate the management systems and processes (including internal review and control processes) used for collecting and reporting the selected disclosures.
- A review at corporate level of a sample of qualitative and quantitative evidence supporting the reported information.
- An analytical review of the year-end data submitted by all locations included in the consolidated 2022 group data for the selected disclosures which included testing the completeness and mathematical accuracy of conversions and calculations, and consolidation in line with the stated reporting boundary.
- Virtual Visits to select locations within the three Business Units (BU) – Tupper Montney in onshore Canada, Tilden in onshore USA and Cascade & Chinook in offshore USA to review source data and local reporting systems and controls. In addition, there were multiple discussions with key stakeholders in the respective BUs, data owners and operational staff at the Remote Operating Center to review activity data, emission calculations and internal and external data quality controls.
- Assessing the conversion and emission factors and assumptions used.
- Reviewing the presentation of information relevant to the scope of our work in the Report to ensure consistency with our findings.

The limitations of our engagement

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 independence, integrity and quality control

ERM CVS is an independent certification and verification body accredited by UKAS to ISO 17021:2015. Accordingly, we maintain a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements. Our quality management system is at least as demanding as the relevant sections of ISQM-1 and ISQM-2 (2022).

ERM CVS applies a Code of Conduct and related policies to ensure that its employees maintain integrity, objectivity, professional competence, and high ethical standards in their work. Our processes are designed and implemented to ensure that the work we undertake is objective, impartial and free from bias and conflict of interest. Our certified management system covers independence and ethical requirements that are at least as demanding as the relevant sections of the IESBA Code relating to assurance engagements.

ERM CVS has extensive experience in conducting assurance on environmental, social, ethical and health and safety information, systems, and processes, and provides no consultancy related services to Murphy Oil in any respect.

Beth C. B. Wyke

Beth Wyke
Head of Corporate Assurance Services
Malvern, PA

July 25, 2023

ERM Certification & Verification Services Incorporated
www.ermcvs.com | post@ermcvs.com

ERMCVS

Content Indices

Sustainability Accountability Standards Board (SASB)

Code	Metric	Location
Greenhouse Gas Emissions		
EM-EP-110a.1	Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations	Performance Data, page 98
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 98
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 Our Emissions Performance, page 20
Air Quality		
EM-EP-112a.1	Air emissions of the following pollutants: (1) NO_X (excluding N_2O), (2) SO_X, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM_{10})	Performance Data, page 100; Improving Our Emissions Performance: Combustion, page 24
Water Management		
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, page 100; Water Management, page 37
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, page 100
EM-EP-140a.3	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used	Performance Data, page 101; Chemical Stewardship, page 54
EM-EP-140a.4	Percentage of hydraulic fracturing sites where ground or surface water quality deteriorated compared to a baseline	Performance Data, page 101; Water Management, page 37; Well Integrity, page 52
Biodiversity Impacts		
EM-EP-160a.1	Description of environmental management policies and practices for active sites	Biodiversity Protection, page 45
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 102
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 102

Code	Metric	Location
Human Rights and Community Relations		
EM-EP-210a.1	Percentage of (1) proved and (2) probable reserves in or near areas of conflict	Performance Data, page 104
EM-EP-210a.2	Percentage of (1) proved and (2) probable reserves in or near Indigenous land	Performance Data, page 104
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, page 80; **Human Rights** and **Indigenous Rights** Policies on website
EM-EP-210b.1	Discussion of process to manage risks and opportunities associated with community rights and interests	Community Engagement, page 78; Stakeholder Engagement, page 89
EM-EP-210b.2	Number and duration of nontechnical delays	Performance Data, page 104
Workforce Health and Safety		
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, page 102; Safety Performance Monitoring and Measurement, page 62
EM-EP-320a.2	Discussion of management systems used to integrate a culture of safety throughout the exploration and production lifecycle	Protecting Our People, page 60
Reserves Valuation and Capital Expenditures		
EM-EP-420a.1	Sensitivity of hydrocarbon reserve levels to future price projection scenarios that account for a price on carbon emissions	Climate Strategy, page 29
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 104
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, page 29

Code	Metric	Location
Business Ethics and Transparency		
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 104
EM-EP-510a.2	Description of the management system for prevention of corruption and bribery throughout the value chain	Ethical Business Conduct, page 94; Supply Chain Management, page 95; **Code of Business Conduct and Ethics**, **Anti-Bribery and Corruption Policy** and **Supplier Code of Conduct** on website
Management of the Legal and Regulatory Environment		
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, page 33; Working With Communities, page 78; Human Rights, page 80; Investing in Our Communities, page 81
Critical Incident Risk Management		
EM-EP-540a.1	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1)	Performance Data, page 102
EM-EP-540a.2	Description of management systems used to identify and mitigate catastrophic and tail-end risks	Asset Integrity and Process Safety, page 49; Well Integrity, page 52; Chemical Stewardship, page 54; Seismicity, page 55; Protecting Our People, page 59; Emergency Response and Preparedness, page 67
Activity Metric		
EM-EP-000.A	Production of: (1) oil, (2) natural gas, (3) synthetic oil and (4) synthetic gas	**2022 SEC Form 10-K**
EM-EP-000.B	Number of offshore sites	**2022 SEC Form 10-K**
EM-EP-000.C	Number of terrestrial sites	**2022 SEC Form 10-K**

Task Force on Climate-Related Financial Disclosures (TCFD)

Element	Disclosure	Location
Governance	Board's oversight of climate-related risks and opportunities	Climate Governance, page 27
	Management's role in assessing and managing climate-related risks and opportunities	Climate Governance, page 27
Strategy	Climate-related risks and opportunities the organization has identified over the short, medium and long term	Climate Strategy, page 29
	Impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning	Climate Strategy, page 29
	Resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	Climate Strategy, page 29
Risk Management	Organization's processes for identifying and assessing climate-related risks	Focusing on What Matters Most, page 12; Climate Risk Management, page 33; Enterprise Risk Management, page 90
	Organization's processes for managing climate-related risks	Climate Risk Management, page 33; Enterprise Risk Management, page 90
	Processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.	Focusing on What Matters Most, page 12; Climate Risk Management, page 33; Enterprise Risk Management, page 90
Metrics and Targets	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 36
	Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	Climate Change and Emissions, page 18; Performance Data, page 98
	Targets used by the organization to manage climate-related risks and opportunities and performance against targets	Climate Metrics and Targets, page 36

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

Indicator	Disclosure	Location
Governance and Business Ethics		
GOV-1	Governance approach	About This Report, page 2; Who We Are, page 8; Our Approach to ESG, page 10; Governance and Responsible Business Practices, page 87; **Corporate Governance** on website
GOV-2	Management systems	About This Report, page 2; Who We Are, page 8; Our Approach to ESG, page 10; Protecting Our People, page 59; Governance and Responsible Business Practices, page 87; **Corporate Governance** on website
GOV-3	Preventing corruption	Ethical Business Conduct, page 94; Supply Chain Management, page 95; **Corporate Governance** and **Supplier Code of Conduct** on website
GOV-4	Transparency of payments to host governments	Public Advocacy, page 95
GOV-5	Public advocacy and lobbying	Public Advocacy, page 95
Climate Change and Energy		
CCE-1	Climate governance and strategy	Board and Managerial Oversight of ESG topics, page 14; Climate Governance, page 27; Climate Strategy, page 29; **Climate Change Position** on website
CCE-2	Climate risk and opportunities	Climate Change and Emissions, page 18; Climate Risk Management, page 33; Climate Metrics and Targets, page 36; Enterprise Risk Management, page 90
CCE-3	Lower-carbon technology	Climate Change and Emissions, page 18
CCE-4	Greenhouse gas (GHG) emissions	Climate Change and Emissions, page 18; Performance Data, page 98
CCE-5	Methane emissions	Improving Our Emissions Performance: Methane, page 22; Performance Data, page 98
CCE-6	Energy use	Improving Our Emissions Performance: Combustion, page 24; Performance Data, page 99
CCE-7	Flared gas	Improving Our Emissions Performance: Flaring, page 25; Performance Data, page 98

Indicator	Disclosure	Location
Environment		
ENV-1	Freshwater	Water Management, page 37; Performance Data, page 100
ENV-2	Discharges to water	Water Management, page 37; Performance Data, page 100
ENV-3	Biodiversity policy and strategy	Biodiversity Protection, page 45
ENV-4	Protected and priority areas for biodiversity conservation	Biodiversity Protection, page 45
ENV-5	Emissions to air	Improving Our Emissions Performance: Combustion, page 24; Performance Data, page 100
ENV-6	Spills to the environment	Spills Management, page 48; Asset Integrity and Process Safety, page 49; Well Integrity, page 52; Emergency Response and Preparedness, page 67; Performance Data, page 102
ENV-7	Materials management	Water Management, page 37; Chemical Stewardship, page 54; Waste Management, page 56; Performance Data, page 101
ENV-8	Decommissioning	Well Abandonment, page 53; Biodiversity Protection, page 45
Safety, Health and Security		
SHS-1	Safety, health and security engagement	Protecting Our People, page 59
SHS-2	Workforce and community health	Building a Culture of Safety, page 64; Health, Safety and Environmental Management System, page 61; Benefits and Wellness, page 73
SHS-3	Occupational injury and illness incidents	Protecting Our People, page 59; Performance Data, page 102
SHS-4	Transport safety	Building a Culture of Safety, page 64; Safety Performance Monitoring and Measurement, page 62; Performance Data, page 103
SHS-5	Product stewardship	As an upstream company, we ensure that we comply with local laws and regulations pertaining to communicating the risks of handling and transporting of our products. Chemical Stewardship, page 54
SHS-6	Process safety	Asset Integrity and Process Safety, page 49; Performance Data, page 102
SHS-7	Security risk management	Physical Security, page 68; Emergency Response and Preparedness, page 67; Enterprise Risk Management, page 90; Cybersecurity, page 91

Indicator	Disclosure	Location
Social		
SOC-1	Human rights due diligence	Human Rights, page 80; Ethical Business Conduct, page 94; **Human Rights Policy** on website
SOC-2	Suppliers and human rights	Human Rights, page 80; Ethical Business Conduct, page 94; Supply Chain Management, page 95; Contractor Management, page 66; **Supplier Code of Conduct** on website
SOC-3	Security and human rights	Human Rights, page 80
SOC-4	Site-based labour practices and worker accommodation	Health, Safety and Environmental Management System, page 61; Human Rights, page 80; Ethical Business Conduct, page 94; Supply Chain Management, page 95; Contractor Management, page 66
SOC-5	Workforce diversity and inclusion	Diversity, Equity and Inclusion, page 70; Performance Data, page 103; **EEO-1 Data** on website
SOC-6	Workforce engagement	Employee Engagement, page 76; Performance Data, page 103
SOC-7	Workforce training and development	Talent, Recruitment and Development, page 74; Performance Data, page 103
SOC-8	Workforce nonretaliation and grievance mechanisms	Ethical Business Conduct, page 94; **Corporate Governance: Reporting of Concerns** on website
SOC-9	Local community impacts and engagement	Community Engagement, page 77; Stakeholder Engagement, page 89
SOC-10	Indigenous peoples	Protecting Indigenous Rights, page 80
SOC-11	Land acquisition and involuntary resettlement	Not applicable
SOC-12	Community grievance mechanisms	Working With Communities, page 78; Grievance Reporting, page 80; **Corporate Governance: Reporting of Concerns** on website
SOC-13	Social investment	Investing in Our Communities, page 81
SOC-14	Local procurement and supplier development	Working With Communities, page 78; Supply Chain Management, page 95
SOC-15	Local hiring practices	Local Hiring, page 72; Working With Communities, page 78

Global Reporting Initiative (GRI) Sector Standard for Oil and Gas 2021

Statement of use: Murphy Oil Corporation has reported the information cited in this GRI content index for the period January 1, 2022 to December 31, 2022 with reference to the GRI Standards.

Indicator	Disclosure	Location
GRI 1: Foundation 2021		
Requirement 7: Publish a GRI Content Index		
7-a-i	GRI content index	This index
Requirement 8: Provide a Statement of Use		
8-a	Claims of reporting in accordance with the GRI Standards	Above
GRI 2: General Disclosures 2021		
Organization and Reporting Practices		
2-1 Organizational Details		
2-1-a	Legal name of the organization	Murphy Oil Corporation
2-1-b	Nature of 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"
2-1-c	Location of headquarters	9805 Katy Fwy, Suite G-200, Houston, Texas 77024
2-1-d	Countries of operation	United States, Canada, Brunei, Australia, Vietnam, Mexico, Brazil
2-2 Entities Included in Sustainability Reporting		
2-2-a	Entities included in the consolidated financial statements	**2022 SEC Form 10-K**
2-2-b	Financial information filed on public record	**2022 SEC Form 10-K**
2-2-c	If organization consists of multiple entities, explain approach for consolidating information	Not applicable
2-3 Reporting Period, Frequency and Contact Point		
2-3-a	Reporting period	About This Report, page 2; Unless otherwise stated, this report covers the period of Jan. 1 to Dec. 31, 2022.
2-3-b	Reporting cycle	Annual
2-3-c	Publication date	August 3, 2023
2-3-d	Contact point for questions regarding the report	**sustainability@murphyoilcorp.com**
2-4 Restatements of Information		
2-4-a	Restatements of information	About This Report, page 2
2-5 External Assurance		
2-5-a	Policy for seeking external assurance	Internal and External Assurance, page 2
2-5-b	If sustainability report has been externally assured	Independent Assurance Statement, page 107
Activities and Workers		
2-6 Activities, value chain, and other business relationships		
2-6-a	Sector in which active	Oil and Gas Sector
2-6-b-i	Activities, products, services, scale and markets served	Murphy Oil Corporation is a global oil and natural gas exploration and production company, with both onshore and offshore operations and properties. **2022 SEC Form 10-K**
2-6-b-ii	Supply chain	Supply Chain Management, page 95

Indicator	Disclosure	Location
2-6-b-iii	Entities downstream and their activities	Refining and marketing
2-6-c	Other relevant business relationships not part of value chain	None
2-6-d	Significant changes to the organization and its supply chain	None
2-7 Employees		
2-7-a	Total number of employees by gender and region	Investing in Our People, page 69; Performance Data, page 103; **EEO-1 Data** on website
2-7-b	Permanent, temporary, non-guaranteed hours, full-time, and part-time employees by gender and region	Investing in Our People, page 69; Performance Data, page 103; **EEO-1 Data** on website
2-7-c	Methodologies and assumptions used to compile data	Investing in Our People, page 69
2-7-d	Contextual information supporting 2-7-a and 2-7-b	Investing in Our People, page 69
2-7-e	Significant fluctuations in the number of employees during and between the reporting periods	Investing in Our People, page 69
Governance		
2-9 Governance Structure and Composition		
2-9-a	Governance structure	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; **2023 Proxy Statement**
2-9-b	List committees of the highest governance body responsible for decisionmaking on and overseeing the management of the organization's impacts on the economy, environment, and people	Climate Governance, page 27; **2023 Proxy Statement**
2-9-c	Composition of the highest governance body and its committees	Governance Highlights, page 88; **2023 Proxy Statement**
2-10 Nomination and Selection of the Highest Governance Body		
2-10-a	Nomination and selection of the highest governance body	Board and Managerial Oversight of Sustainability, page 14; **2023 Proxy Statement**
2-10-b	Criteria used for nominating and selecting highest governance body members	Board and Managerial Oversight of Sustainability, page 14; **2023 Proxy Statement**
2-11 Chair of the Highest Governance Body		
2-11-a	Chair of the highest governance body	Governance Highlights, page 88; **2023 Proxy Statement**
2-11-b	If chair is also a senior executive, explain their function within organizational management	Not applicable
2-12 Role of the Highest Governance Body in Overseeing the Management of Impacts		
2-12-a	Role of highest governance body in setting purpose, values, strategy, and policies	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; **2023 Proxy Statement**
2-12-b	Identifying and managing economic, environmental, and social impacts	Focusing on What Matters Most, page 12; Engaging Our Stakeholders, page 12; Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; Enterprise Risk Management, page 90
2-12-b	If the highest governance body engages with stakeholders to support these process and how it considers the outcomes	Engaging Our Stakeholders, page 12; **2023 Proxy Statement**
2-12-c	Effectiveness and frequency of risk management processes	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; Enterprise Risk Management, page 90

Indicator	Disclosure	Location
2-13 Delegation of Responsibility for Managing Impacts		
2-13-a	Delegating authority	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27
2-13-b	Executive-level responsibility for economic, environmental, and social topics	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; Individual sections of report
2-14 Role of the Highest Governance Body in Sustainability Reporting		
2-14-a	Highest governance body's role in sustainability reporting	Health, Safety, Environment and Corporate Responsibility (HSE&CR) Board Committee; About This Report, page 2; **HSE&CR Board Committee Charter** on website
2-14-b	If the highest governance body is not responsible, explain	Not applicable
2-15 Conflicts of Interest		
2-15-a	Conflicts of interest	Ethical Business Conduct, page 94; **Corporate Governance: Reporting of Concerns** on website; **2023 Proxy Statement**
2-15-b	If conflicts of interest are disclosed to stakeholders including: cross-board membership, cross-shareholding with suppliers or other stakeholders, existence of controlling shareholders, related parties, their relationships, transactions, and outstanding balances	**2023 Proxy Statement**
2-16 Communication of Critical Concerns		
2-16-a	Communicating critical concerns	Board and Managerial Oversight of Sustainability, page 14; Climate Governance, page 27; **2023 Proxy Statement**
2-17 Collective Knowledge of the Highest Governance Body		
2-17-a	Collective knowledge of highest governance body	Governance Highlights, page 88; **2023 Proxy Statement**
2-18 Evaluation of the Performance of the Highest Governance Body		
2-18-a	Evaluating the highest governance body's performance	**2023 Proxy Statement**
2-18-b	Reporting if evaluations are independent and frequency	**2023 Proxy Statement**
2-18-c	Actions taken in response to evaluations	**2023 Proxy Statement**
2-19 Remuneration Policies		
2-19-a	Remuneration policies	**2023 Proxy Statement**
2-19-b	Remuneration policies for members of the highest governance body and senior executives relate to their objectives and performance	**2023 Proxy Statement**
2-20 Process to Determine Remuneration		
2-20-a	Process for determining remuneration	**2023 Proxy Statement**
2-20-b	Stakeholders' involvement in remuneration	**2023 Proxy Statement**
2-21 Annual Total Compensation Ratio		
2-21-a	Annual total compensation ratio	**2023 Proxy Statement**
2-21-b	Percentage increase in annual total compensation ratio	**2023 Proxy Statement**
2-21-c	Contextual information supporting total compensation ratio	**2023 Proxy Statement**

Indicator	Disclosure	Location
Strategy, Policies and Practices		
2-22 Statement on Sustainable Development Strategy		
2-22-a	Statement from senior decision-maker	Message to Our Stakeholders, page 6
2-23 Policy Commitments		
2-23-a	Precautionary Principle or approach	Our Approach to ESG, page 10; Focusing on What Matters Most, page 12; Climate Change, page 18; Climate Risk Management, page 33; Water Management Strategy and Risk Management, page 38; Biodiversity Protection, page 45; Asset Integrity and Process Safety, page 49; Building a Culture of Safety, page 64
2-23-b	Values, principles, standards, and norms of behavior	Our Purpose, Mission, Vision, Values and Behaviors, page 9; Human Rights, page 80; Ethical Business Conduct, page 94
2-23-c	Links to policy commitments	Ethical Business Conduct, page 94
2-23-d	Level of approval for policy commitments	Ethical Business Conduct, page 94
2-23-e	Application of policy commitments to activities and business relationships	Ethical Business Conduct, page 94
2-23-f	Communication of policy commitments	Ethical Business Conduct, page 94
2-24 Embedding Policy Commitments		
2-23-a	Embedding, integration, and implementation of policy commitments	Ethical Business Conduct, page 94
2-25 Processes to Remediate Negative Impacts		
2-25-a	Commitment for remediation of negative impacts	Our Mitigation Hierarchy, page 45
2-25-b	Grievance mechanisms	Biodiversity Concern Reporting, page 47; Understanding and Responding to Community Feedback, page 79; Grievance Reporting, page 80
2-25-c	Other processes for remediation of negative impacts	Our Mitigation Hierarchy, page 45
2-25-d	Stakeholders' involvement in grievance mechanisms	Grievance Reporting, page 80
2-25-e	Tracking effectiveness of grievance mechanisms	Grievance Reporting, page 80
2-26 Mechanisms for Seeking Advice and Raising Concerns		
2-26-a	Mechanisms for advice and concerns about ethics	Ethical Business Conduct, page 94; **Corporate Governance: Reporting of Concerns** on website
2-27 Compliance with Laws and Regulations		
2-27-a	Non-compliance with environmental laws and regulations	Performance Data, page 102
2-27-b	Total number and value of fines for instances of non-compliance with laws and regulations	Performance Data, page 102
2-28 Membership Associations		
2-28-a	Membership of associations	Industry Associations, page 95

Indicator	Disclosure	Location
Stakeholder Engagement		
2-29 Approach to Stakeholder Engagement		
2-29-a	Approach to stakeholder engagement	Engaging Our Stakeholders, page 12; Stakeholder Engagement, page 89; **2023 Proxy Statement**
2-29-a-i	Identifying and selecting stakeholders	Engaging Our Stakeholders, page 12; Stakeholder Engagement, page 89; **2023 Proxy Statement**
2-29-a-ii,iii	Purpose and meaningful engagement of stakeholders	Engaging Our Stakeholders, page 12; Stakeholder Engagement, page 89; **2023 Proxy Statement**
2-30 Collective Bargaining Agreements		
2-30-a	Percentage of total employees covered by collective bargaining agreements	We follow all laws in regards to a worker's ability to bargain as a group instead of individually. At this time, we do not have any unions.
2-30-b	Determination of working conditions and terms of employment for employees not covered by collective bargaining agreements	We follow all laws in regards to a worker's ability to bargain as a group instead of individually. At this time, we do not have any unions.
GRI 3: Material Topics 2021		
3-1 Process to Determine Material Topics		
3-1-a	Defining report content and topic Boundaries	About This Report, page 2; Focusing on What Matters Most, page 12
3-1-b	Stakeholders and experts informing the process to determine material topics	About This Report, page 2; Focusing on What Matters Most, page 12
3-2 List of Material Topics		
3-2-a	List of material topics	Focusing on What Matters Most, page 12
3-2-b	Changes in reporting	None
3-3 Management of Material Topics		
3-3-a	Actual and potential negative impacts	Focusing on What Matters Most, page 12
3-3-b	Involvement with negative impacts through direct or indirect activities	Climate Governance, page 27; Climate Risk Management, page 33, Enterprise Risk Management, page 90
3-3-c	Policies or commitments regarding material topics	Climate Governance, page 27; Climate Risk Management, page 33, Enterprise Risk Management, page 90
3-3-d	Precautionary Principle or approach	Climate Governance, page 27; Climate Risk Management, page 33, Enterprise Risk Management, page 90
3-3-e	Tracking effectiveness of actions taken	Climate Governance, page 27; Climate Risk Management, page 33, Enterprise Risk Management, page 90
3-3-f	How stakeholder engagement has informed actions	Stakeholder Engagement, page 89
GRI 11: Oil and Gas Sector 2021		
Sector Profile		
	Sector activities and business relationships	Murphy Oil Corporation is a global oil and natural gas exploration and production company, with both onshore and offshore operations and properties.
	Sector and sustainable development	Contributing to the United Nations Sustainable Development Goals, page 11; Climate Strategy, page 29

Indicator	Disclosure	Location
GRI 11.1: GHG Emissions		
11.1.1	Management of material topics	Climate Change and Emissions, page 18
11.1.2	Energy consumption within the organization	Performance Data, page 97
11.1.4	Energy intensity	Performance Data, page 97
11.1.5	Direct (Scope 1) GHG emissions	Climate Change and Emissions, page 18; Performance Data, page 97
11.1.6	Energy indirect (Scope 2) GHG emissions	Climate Change and Emissions, page 18; Performance Data, page 97
11.1.7	Other indirect (Scope 3) GHG emissions	Climate Change and Emissions, page 18; Performance Data, page 97
11.1.8	GHG emissions intensity	Climate Change and Emissions, page 18; Performance Data, page 97
GRI 11.2: Climate Adaptation, Resilience, and Transition		
11.2.1	Management of material topics	Climate Change and Emissions, page 18
11.2.2	Financial implications and other risks and opportunities due to climate change	**2022 SEC Form 10-K**
11.2.3	Reduction of GHG emissions	Climate Change and Emissions, page 18; Performance Data, page 97
11.2.4	Approach to public policy development and lobbying on climate change	Climate Change and Emissions, page 18; Performance Data, page 97
GRI 11.3: Air Emissions		
11.3.1	Management of material topics	Climate Change and Emissions, page 18
11.3.2	Nitrogen oxides (NO_X), sulfur oxides (SO_X), and other significant air emissions	Performance Data, page 100
11.3.3	Assessment of the health and safety impacts of product and service categories	Climate Change and Emissions, page 18
GRI 11.4: Biodiversity		
11.4.1	Management of material topics	Biodiversity Protection, page 45
11.4.2	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Biodiversity Protection, page 45; Performance Data, page 102
11.4.3	Significant impacts of activities, products, and services on biodiversity	Biodiversity Protection, page 45; Performance Data, page 102
11.4.4	Habitats protected or restored	Biodiversity Protection, page 45; Performance Data, page 102
11.4.5	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Biodiversity Protection, page 45
GRI 11.5: Waste		
11.5.1	Management of material topics	Waste Management, page 56
11.5.2	Waste generation and significant waste-related impacts	Waste Management, page 56
11.5.3	Management of significant waste-related impacts	Waste Management, page 56
11.5.4	Waste generated	Performance Data, page 101
11.5.5	Waste diverted from disposal	Waste Management, page 56
11.5.6	Waste directed to disposal	Waste Management, page 56

Indicator	Disclosure	Location
GRI 11.6: Water and Effluents		
11.6.1	Management of material topics	Water Management, page 37
11.6.2	Interactions with water as a shared resource	Water Management, page 37; Performance Data, page 97
11.6.3	Management of water discharge-related impacts	Water Management, page 37; Performance Data, page 101
11.6.4	Water withdrawal	Water Management, page 37; Performance Data, page 101
11.6.5	Water discharge	Water Management, page 37; Performance Data, page 101
11.6.6	Water consumption	Water Management, page 37; Performance Data, page 101
GRI 11.7: Closure and Rehabilitation		
11.7.1	Management of material topics	Biodiversity, Protection, page 45
11.7.2	Minimum notice periods regarding operational changes	Site Closure, Decommissioning and Restoration, page 46; Well Abandonment, page 53
11.7.3	Programs for upgrading employee skills and transition assistance programs	Benefits and Wellness, page 73
11.7.4	Operational sites with closure and rehabilitation plans in place and closures	Site Closure, Decommissioning and Restoration, page 46; Well Abandonment, page 53
11.7.5	Decommissioned structures left in place and rationale	Site Closure, Decommissioning and Restoration, page 46; Well Abandonment, page 53
11.7.6	Total monetary value of financial provisions for closure and rehabilitation made by the organization, including, post-closure monitoring and aftercare for operational sites	Site Closure, Decommissioning and Restoration, page 46; Well Abandonment, page 53; **2022 SEC Form 10-K**
GRI 11.8: Asset Integrity and Critical Incident Management		
11.8.1	Management of material topics	Spills Management, page 48; Asset Integrity and Process Safety, page 49
11.8.2	Significant spills	Spills Management, page 48; Performance Data, page 97
11.8.3	Total number of Tier 1 and Tier 2 process safety events by business activity	Process Safety, page 51; Performance Data, page 97
11.8.4	Additional sector disclosures for oil sands mining operations	Not applicable
GRI 11.9: Occupational Health and Safety		
11.9.1	Management of material topics	Protecting Our People, page 59
11.9.2	Occupational health and safety management system	Health, Safety and Environmental Management System, page 61
11.9.3	Hazard identification, risk assessment, and incident investigation	Asset Integrity and Process Safety, page 49; Health and Safety Certification and Audit, page 63; Building a Culture of Safety, page 64; Safety Performance Monitoring and Measuring, page 62
11.9.4	Occupational health services	Contractor Management, page 66
11.9.5	Worker participation, consultation, and communication on occupational health and safety	Building a Culture of Safety, page 64; Contractor Management, page 66; Emergency Response and Preparedness, page 67
11.9.6	Worker training on occupational health and safety	Building a Culture of Safety, page 64; Contractor Management, page 66; Emergency Response and Preparedness, page 67

Indicator	Disclosure	Location
11.9.7	Promotion of worker health	Benefits and Wellness, page 73
11.9.8	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Asset Integrity and Process Safety, page 49; Building a Culture of Safety, page 64; **Protecting Our People: HSE Policy** on website
11.9.9	Workers covered by an occupational health and safety management system	Health, Safety and Environmental Management System, page 61
11.9.10	Work-related injuries	Safety Performance Monitoring and Measuring, page 62; Performance Data, page 102
GRI 11.10: Employment Practices		
11.10.1	Management of material topics	Investing in Our People, page 69
11.10.2	New employee hires and employee turnover	Employee Engagement, page 76; Performance Data, page 103
11.10.3	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Benefits and Wellness, page 73
11.10.4	Parental leave	Benefits and Wellness, page 73; **Careers: Benefits** on website
11.10.6	Average hours of training per year per employee	Talent, Recruitment and Development, page 74; Performance Data, page 104
11.10.7	Programs for upgrading employee skills and transition assistance programs	Talent, Recruitment and Development, page 74
11.10.8	New suppliers that were screened using social criteria	Supply Chain Management, page 95
11.10.9	Negative social impacts in the supply chain and actions taken	Supply Chain Management, page 95
GRI 11.11: Non-discrimination and Equal Opportunity		
11.11.1	Management of material topics	Investing in Our People, page 69
11.11.2	Proportion of senior management hired from the local community	Local Hiring, page 82
11.11.3	Parental leave	Benefits and Wellness, page 73
11.11.4	Average hours of training per year per employee	Talent, Recruitment and Development, page 74
11.11.5	Diversity of governance bodies and employees	Diversity, Equity and Inclusion, page 70; Governance Highlights, page 88; Performance Data, page 103; **EEO-1 Data** on website; **2023 Proxy Statement**
11.11.6	Ratio of basic salary and remuneration	**2023 Proxy Statement**
11.11.7	Incidents of discrimination and corrective actions taken	Ethical Business Conduct, page 94
GRI 11.12: Forced Labor and Modern Slavery		
11.12.1	Management of material topics	**Human Rights Policy** on website
11.12.2	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Human Rights, page 80; Supply Chain Management, page 95; **Supplier Code of Conduct** on website
11.12.3	New suppliers that were screened using social criteria	Human Rights, page 80; Supply Chain Management, page 95; **Supplier Code of Conduct** on website

Indicator	Disclosure	Location
GRI 11.13: Freedom of Association and Collective Bargaining		
11.13.1	Management of material topics	**Human Rights Policy** on website
11.13.2	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Human Rights, page 80
GRI 11.14: Economic impacts		
11.14.1	Management of material topics	**2022 SEC Form 10-K**
11.14.2	Direct economic value generated and distributed	**2022 SEC Form 10-K**
11.14.5	Significant indirect economic impacts	Economic Impact, page 82
GRI 11.15: Local communities		
11.15.1	Management of material topics	Community Engagement, page 77
11.15.2	Operations with local community engagement, impact assessments and development programs	Community Engagement, page 77
11.15.3	Operations with significant actual and potential negative impacts on local communities	Understanding and Responding to Community Feedback, page 79
GRI 11.16: Land and resource rights		
11.16.1	Management of material topics	**Human Rights Policy** and **Indigenous Rights Policy** on website
11.16.2	Location of operations that caused or contributed to involuntary resettlement or where such resettlement is ongoing. For each location, describe how peoples' livelihoods and human rights were affected and restored	Not applicable
GRI 11.17: Rights of Indigenous Peoples		
11.17.1	Management of material topics	**Indigenous Rights Policy** on website
11.17.3	Location of operations where indigenous peoples are present or affected by activities of the organization	Proactive Community Engagement on Biodiversity and Site Impacts, page 47; Community Engagement Oversight, page 78; Protecting Indigenous Rights, page 80
11.17.4	Report if the organization has been involved in a process of seeking free, prior and informed consent (FPIC) from indigenous peoples for any of the organization's activities, including, in each case: whether the process has been mutually accepted by the organization and the affected indigenous peoples; whether an agreement has been reached, and if so, if the agreement is publicly available.	Proactive Community Engagement on Biodiversity and Site Impacts, page 47; Community Engagement Oversight, page 78; Protecting Indigenous Rights, page 80; **Indigenous Rights Policy** on website
GRI 11.18: Conflict and Security		
11.18.1	Management of material topics	**Human Rights Policy** and **Supplier Code of Conduct** on website
11.18.2	Security personnel trained in human rights policies or procedures	Human Rights, page 80; **Human Rights Policy** and **Supplier Code of Conduct** on website
GRI 11.19: Anti-competitive Behavior		
11.19.1	Management of material topics: anti-competitive behavior	Committed to Ethics, page 94; **Corporate Governance** on website
11.19.2	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Committed to Ethics, page 94

Indicator	Disclosure	Location
GRI 11.20: Anti-corruption		
11.20.1	Management of material topics	**Anti-Bribery and Corruption Policy** on website
11.20.2	Operations assessed for risks related to corruption	Human Rights, page 80; Ethical Business Conduct, page 94; Public Advocacy, page 95; Supply Chain Management, page 95; **Anti-Bribery and Corruption Policy** on website
11.20.3	Communication and training about anti-corruption policies and procedures	Human Rights, page 80; Ethical Business Conduct, page 94; Public Advocacy, page 95; Supply Chain Management, page 95; **Anti-Bribery and Corruption Policy** on website
11.20.5	Approach to contract transparency	Contractor Management, page 66; Committed to Ethics, page 94; Public Advocacy, page 95
11.20.6	List the organization's beneficial owners and explain how the organization identifies the beneficial owners of business partners, including joint ventures and suppliers	Stakeholder Engagement, page 89
GRI 11.21: Payments to Governments		
11.21.1	Management of material topics	**2022 SEC Form 10-K**
11.21.2	Direct economic value generated and distributed	**2022 SEC Form 10-K**
11.21.4	Approach to tax	**2022 SEC Form 10-K**
11.21.5	Tax governance, control, and risk management	Focusing on What Matters Most, page 12; Climate Risk Management, page 33; Enterprise Risk Management, page 90
11.21.6	Stakeholder engagement and management of concerns related to tax	Stakeholder Engagement, page 89; **2022 SEC Form 10-K**
11.21.7	Country-by-country reporting	**2022 SEC Form 10-K**
11.21.8	For oil and gas purchased from the state, or from third parties appointed by the state to sell on their behalf, report	**2022 SEC Form 10-K**
GRI 11.22: Public Policy		
11.22.1	Management of material topics	**Corporate Governance** on website
11.22.2	Political contributions	Public Advocacy, page 95

United Nations Sustainable Development Goals

Goal		Location
Goal 1	End poverty in all its forms everywhere	Community Engagement, page 77
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Community Engagement, page 77
Goal 3	Ensure healthy lives and promote well-being for all at all ages	Climate Change and Emissions, page 18; Protecting Our People, page 59; Benefits and Wellness, page 73; Community Engagement, page 77
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Talent, Recruitment and Development, page 74; Community Engagement, page 77
Goal 5	Achieve gender equality and empower all women and girls	Diversity, Equity and Inclusion, page 70; Benefits and Wellness, page 73; Community Engagement, page 77
Goal 6	Ensure availability and sustainable management of water and sanitation for all	Water Management, page 37; Spills Management, page 48; Asset Integrity and Process Safety, page 49; Emergency Response and Preparedness, page 67; Waste Management, page 56
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all	Climate Change and Emissions, page 18; **Climate Change Position** on website
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Talent, Recruitment and Development, page 74; Community Engagement, page 77; Supply Chain Management, page 95
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Community Engagement, page 77
Goal 10	Reduce inequality within and among countries	Not applicable
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable	Not applicable
Goal 12	Responsible consumption and production—ensure sustainable consumption and production patterns	Climate Change and Emissions, page 18; Water Management, page 37; Biodiversity Protection, page 45; Spills Management, page 48; Asset Integrity and Process Safety, page 49; Well Integrity, page 52; Chemical Stewardship, page 54; Seismicity, page 55; Waste Management, page 56; Supply Chain Management, page 95
Goal 13	Take urgent action to combat climate change and its impacts	Climate Change and Emissions, page 18; Water Management, page 37; **Climate Change Position** on website
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Water Management, page 37; Spills Management, page 48; Asset Integrity and Process Safety, page 49; Emergency Response and Preparedness, page 67; Waste Management, page 56
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, page 37; Biodiversity Protection, page 45; Spills Management, page 48; Asset Integrity and Process Safety, page 49
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, page 94; Public Advocacy, page 95; Supply Chain Management, page 95
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	2023 Sustainability Report, multiple sections on industry collaboration and partnerships

Reader Advisory

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, results and plans, are subject to inherent risks, uncertainties and assumptions (many of which are beyond the Company's control) and are not guarantees of performance. In particular, statements, express or implied, concerning the Company's future operating results or activities and returns or the Company's ability to generate returns, reduce or otherwise control operating costs and expenditures, achieve, reach or otherwise meet initiatives, plans, goals, ambitions or targets with respect to emissions, safety matters or other ESG (environmental/social/governance) matters, or other capital allocation decisions are forward-looking statements.

Readers should not place undue reliance on forward-looking statements, which speak only as of the date such statements were first made. Except to the extent required by law, the Company undertakes no obligation to update or revise its forward-looking statements. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected, anticipated, or implied. Although it is not possible to predict or identify all such risks and uncertainties, they include, but are not limited to, the factors described under "Forward-Looking Statements" and "Risk Factors" in the Company's most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the SEC.

Except where noted, the information covered in this report highlights the Company's performance and initiatives in fiscal year 2022. All calculations and statistics are in part dependent on the use of estimates and assumptions based on historical levels and projections and are therefore subject to change. This report has not been externally assured or verified by an independent third party. The inclusion of information or the absence of information in this report should not be construed to represent the Company's belief regarding the materiality or financial impact of that information. For a discussion of information that is material to the Company, please see the Company's filings with the SEC, including its most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q. This report may contain links to other internet sites or references to third parties. Such links or references are not incorporated by reference to this report and we can provide no assurance as to their accuracy. The use or inclusion of the information is also not intended to represent endorsements of any products or services. In addition, the report includes 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 estimates 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.

MURPHY OIL CORPORATION

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

MURPHY OIL CORPORATION
9805 Katy Freeway Suite G-200
Houston, Texas 77024
+1.281.675.9000

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NYSE