

JULY 2023

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# Perspectives on Climate-Related Scenarios

Risks and Opportunities

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## Glossary of Terms

**approximately:** the symbol "≈" is used throughout the report and means approximate or approximately

**barrel:** 42 U.S. gallons — a common volume measure for crude oil and petroleum products

**barrel of oil equivalent or boe:** A unit of energy based on the energy released by burning one barrel of crude oil or 5.8 million British thermal units

**bcm:** Billion cubic meters (a measure of natural gas volume)

**bpcd:** Barrels per calendar day — the average of how much crude oil or other feedstock a refinery processes over a period of time, divided by the number of days in that period, typically 365 days (a common rate measure for petroleum refineries)

**bpd:** Barrels per day — a common rate measure for crude oil and petroleum products

**blue hydrogen:** Hydrogen produced through a reaction that separates methane into hydrogen and CO<sub>2</sub> and then captures and sequesters the CO<sub>2</sub>

**CCUS:** carbon capture, utilization and sequestration

**CDP:** Formerly known as the Carbon Disclosure Project, CDP is a not-for-profit charity that runs a global disclosure system for investors, companies, cities, states and regions to report environmental data

**CO<sub>2</sub>e:** Carbon dioxide equivalent — a common unit of measurement converting all greenhouse gases to carbon dioxide. MPC calculates CO<sub>2</sub>e emissions using the EPA factors identified in Table A-1 at 40 CFR Part 98.

**companywide:** Means inclusive of all operations within MPC and MPLX

**EPA:** The U.S. Environmental Protection Agency

**ERM:** Enterprise Risk Management

**ESG:** Environmental, social and governance

**GHG:** Greenhouse gases, such as carbon dioxide and methane

**giga:** Metric prefix for 10<sup>9</sup> (a billion)

**green hydrogen:** Hydrogen produced through electrolysis (from renewable sources or nuclear) of water separating water into hydrogen and oxygen

**Gt CO<sub>2</sub>e:** Giga tonnes CO<sub>2</sub>e

**IEA:** International Energy Agency

**IPCC:** The United Nations Intergovernmental Panel on Climate Change

**LNG:** Liquefied natural gas

**LPG:** Liquefied petroleum gases

**MPC:** Marathon Petroleum Corporation

**MPLX:** MPLX is a diversified, large-cap master limited partnership formed by Marathon Petroleum Corporation that owns and operates midstream energy infrastructure and logistics assets, and provides fuels distribution services

**MPLX G&P:** Our MPLX Gathering and Processing business

**NGL:** Natural gas liquid — a light hydrocarbon liquid often produced with natural gas

**NZE:** IEA's Net-Zero Emissions by 2050 scenario

**renewable diesel:** A hydrocarbon diesel fuel produced by hydroprocessing of fats, vegetable oils and waste cooking oils

**renewable fuel:** Liquid fuel derived from biomass and waste feedstocks and include ethanol, biogasoline, sustainable aviation fuel, biodiesel and renewable diesel

**RNG:** renewable natural gas

**scope 1 emissions:** All direct GHG emissions by a company, including fuel combustion, company vehicles and fugitive emissions

**scope 2 emissions:** Indirect GHG emissions from consumption of purchased electricity, heat or steam

**scope 3 emissions:** Other indirect GHG emissions that occur in a company's value chain that are not captured by Scope 2

**scf:** standard cubic feet

**TCFD:** Task Force on Climate-related Financial Disclosures, formed by the Financial Stability Board (an international body that monitors and makes recommendations about the global financial system)

**tonne or metric ton:** 2,205 pounds

# A Message from Our CEO

At MPC and MPLX, we challenge ourselves to lead in sustainable energy across the many components of our business. This challenge drives our analysis of the risks and opportunities we face as the energy industry evolves, which in turn shapes our goals, our everyday work, and how we invest for the future.

We appreciate your interest in this report, where we provide you with a look at how we see the energy landscape, our thoughts on climate-related risks and opportunities, the resources we put toward addressing them, and the results we have achieved. We have made important progress in GHG emissions reductions, energy efficiency, renewables and more since our last report, and we're excited to share details.

First, we have looked at the latest developments shaping our industry's trajectory, and how best to continue positioning ourselves to succeed. Our petroleum refining and logistics assets help provide the energy security the world needs today, while we simultaneously invest in advancing lower-carbon alternatives like natural gas and renewables. In the long term, we expect demand for certain petroleum-based transportation fuels to decline while demand for natural gas and renewable energy will increase. We invest in our business with this in mind and set our goals accordingly. For instance, our 2023 capital plan allocates ~40% of MPC's growth capital to renewables and carbon-reduction projects.

Regarding our goals, we have previously noted our commitment to update and expand targets as new information, opportunities and/or technologies become available. Throughout this report, we highlight areas where we intend to modify several of our existing targets based upon our progress to date and new information.

While we adjust our climate-related targets based on the best and latest information available to us, we continue investing in our operations to position us optimally for the future. Our industry-leading energy efficiency is one example. We have earned the U.S. EPA's ENERGY STAR® Partner of the Year – Sustained Excellence

award four consecutive years, and our refineries have earned more ENERGY STAR certifications for energy efficiency than all other refineries in the U.S. combined. These accomplishments are not only key components of our GHG emissions reductions – our focus on energy efficiency resulted in over \$100 million in cost savings in 2022.

Our investments in renewables and other lower-carbon technologies are another important facet of our strategy. Our renewable fuels facility in Dickinson, North Dakota, and our renewable fuels facility in Martinez, California, which we co-own through our Martinez Renewables joint venture with Neste, are both producing renewable diesel – Dickinson since 2020, and Martinez since the first quarter of 2023. And we recently expanded our renewables portfolio to include renewable natural gas (RNG) through our acquisition of a 49.9% interest in LF Bioenergy, which builds, owns, and operates facilities that turn organic waste on dairy farms into renewable natural gas (RNG).

In response to the 2021 Infrastructure Investment and Jobs Act, we are participating in three organizations that have applied to be part of U.S. Department of Energy designated hydrogen hubs, which seek to establish production and use of low-carbon hydrogen, including through the use of carbon capture and sequestration, where applicable.

We put tremendous effort into planning these strategic investments, and in balancing them with our annual and longer-term performance goals, as well as our commitment to capital discipline and serving the world's present-day energy needs. I invite you to read this report to learn more about how we are positioning ourselves to lead in sustainable energy.



**Michael J. Hennigan**  
President and CEO, MPC and MPLX



# MPC and MPLX Operations

2.9 million

barrels per calendar day of crude oil refining capacity

2.4 billion

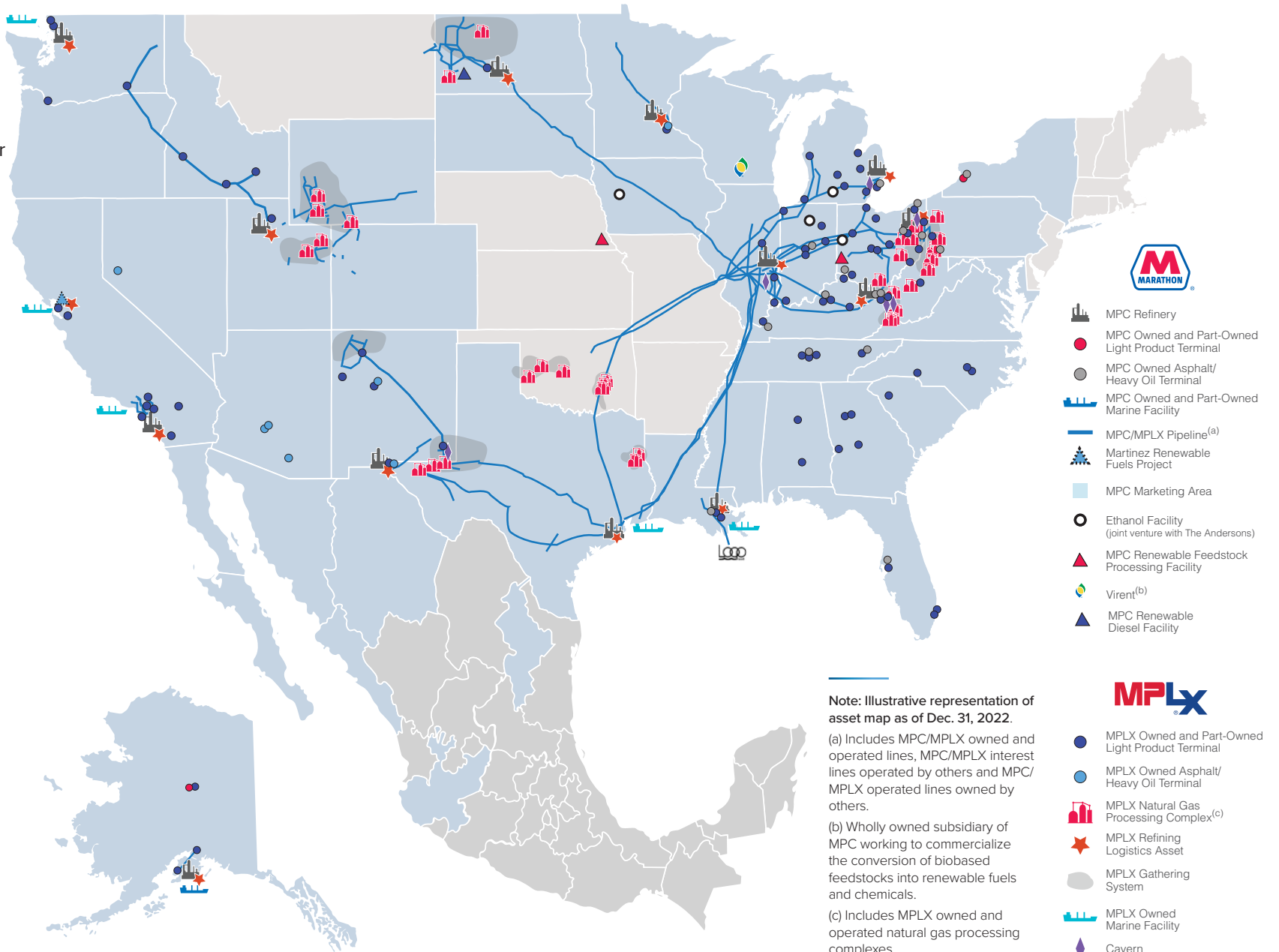
gallons of renewable fuel delivered in 2022

12 billion

standard cubic feet per day of natural gas processing capacity

852 thousand

bpcd of NGL fractionation capacity



- MPC Refinery
- MPC Owned and Part-Owned Light Product Terminal
- MPC Owned Asphalt/Heavy Oil Terminal
- MPC Owned and Part-Owned Marine Facility
- MPC/MPLX Pipeline<sup>(a)</sup>
- Martinez Renewable Fuels Project
- MPC Marketing Area
- Ethanol Facility (joint venture with The Andersons)
- MPC Renewable Feedstock Processing Facility
- Virent<sup>(b)</sup>
- MPC Renewable Diesel Facility



- MPLX Owned and Part-Owned Light Product Terminal
- MPLX Owned Asphalt/Heavy Oil Terminal
- MPLX Natural Gas Processing Complex<sup>(c)</sup>
- MPLX Refining Logistics Asset
- MPLX Gathering System
- MPLX Owned Marine Facility
- Cavern

**Note: Illustrative representation of asset map as of Dec. 31, 2022.**

(a) Includes MPC/MPLX owned and operated lines, MPC/MPLX interest lines operated by others and MPC/MPLX operated lines owned by others.

(b) Wholly owned subsidiary of MPC working to commercialize the conversion of biobased feedstocks into renewable fuels and chemicals.

(c) Includes MPLX owned and operated natural gas processing complexes.

# Introduction

An inclusive energy strategy is essential to energy security and meeting the Paris Agreement's objective to limit global warming.

Energy security is the uninterrupted availability of energy sources at an affordable price. When energy security is threatened, nations tend to utilize whatever energy sources are available, even if those sources counter stated climate goals and initiatives. Reliable and affordable energy is essential to modern society and without it, the modern world would cease to exist as we know it.

**Long-term energy security must be a parallel goal to the Paris Agreement's goal of limiting global warming to well below 2 degrees Celsius. There are approximately 3 billion people without access to reliable electricity seeking to make their lives better, and another 5 billion who seek to maintain or improve their standard of living.**

The evolution to a lower-carbon economy combined with events such as geopolitical unrest or disruptions in trade flows can have a detrimental effect on energy security, harming both groups' aspirations. If this occurs, it is less likely these citizens would support an energy evolution.<sup>3</sup>

There is not one preordained path to achieving the Paris Agreement goal of limiting global warming. As such, numerous different modeled pathways that reach this goal have been published by entities such as the IEA, IPCC and its partners. Some modeled pathways, such as the IEA NZE, rely heavily on eliminating fossil fuels to achieve the desired outcome, while other modeled pathways rely on more inclusive approaches incorporating a variety of strategies, such as replacing coal with natural gas and renewables, energy efficiency and lifestyle changes, biofuels, nuclear, nature-based solutions, and carbon capture, utilization and sequestration.

We believe an energy evolution strategy inclusive of all energy sources and technologies will be more successful than the narrow “renewables-only” strategies that some are promoting. There are still significant intermittency, life cycle, cost and technology hurdles that must be overcome to implement widespread renewable technology and electrification. Liquid and gaseous fuels will be needed until innovation can address these challenges.

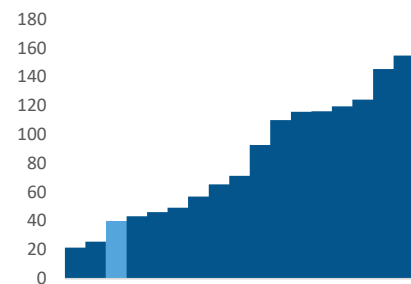
Throughout this report, we provide disclosures that follow recommendations from the TCFD, including a review of our business against “less than 2-degree” or “low- carbon” scenarios available through the IEA and IPCC. We believe our investors and other interested stakeholders will find that the extensive disclosures in this report, as well as our most recent Annual Reports on Form 10-K, Sustainability Report and website, align with the TCFD’s principles and demonstrate our company’s financial strength, adaptiveness and resilience to climate-related risks.

## Comparison of key indicators for the selected IPCC scenarios and the IEA NZE Scenario in 2050

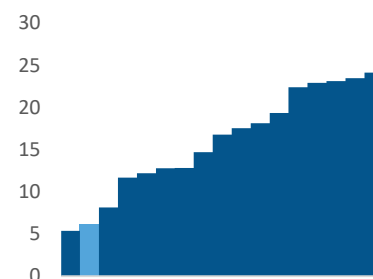
■ IPCC Scenarios ■ NZE

There is no singular pathway to keeping the world's temperature increase to well below 2 degrees Celsius. The IEA compared 16 IPCC-vetted scenarios it identified as achieving the same outcome as its NZE Scenario. While the NZE relies on steep reductions in fossil fuel to achieve its emissions reductions, other comparable IPCC scenarios employ more inclusive energy strategies to achieve the same outcome.<sup>1</sup>

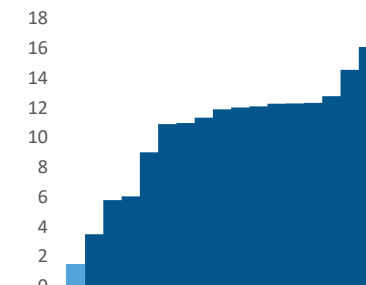
**Primary Oil Supply**  
(exajoules)



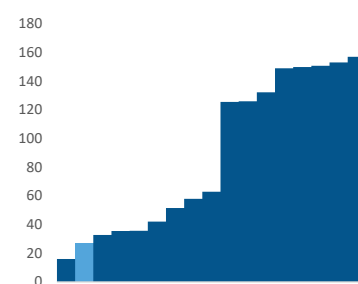
**Carbon Capture, Utilization and Sequestration** (Gt CO<sub>2</sub>)



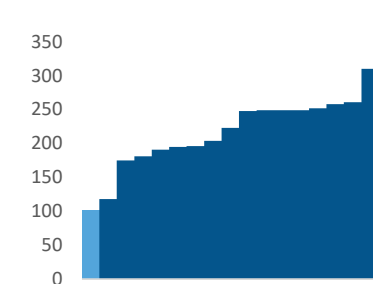
**Energy-related Carbon Dioxide Removal** (Gt CO<sub>2</sub>)<sup>2</sup>



**Primary Natural Gas Supply**  
(exajoules)



**Bioenergy Supply**  
(exajoules)



<sup>1</sup> IPCC scenarios refer to one of 16 vetted IPCC scenarios, identified by the IEA, that reach net-zero energy sector emissions by 2050 (IEA, World Energy Outlook 2022 p. 131-132; International Institute for Applied Systems Analysis, 2022).

<sup>2</sup> Carbon dioxide removal (CDR) from the atmosphere through bioenergy with carbon capture and storage (BECCS) in electricity generation and biofuels production, and through direct air capture and storage (DACs).

<sup>3</sup> See Yergin, Daniel, *Bumps in the Energy Transition*, Finance & Development (Dec. 2022).

# Governance

At MPC, under the leadership and direction of our Board of Directors, we identify and manage climate-related risks and opportunities. Our directors bring a range of backgrounds, critical skills, perspectives and expertise to our Board. For more information on the individual qualifications of each of our Directors, please see our latest Proxy Statement available at <https://www.marathonpetroleum.com/Investors/Annual-Report-Proxy-Statement/>.

The Board's committees, including the Sustainability and Public Policy Committee, are responsible for specific areas of oversight and policy decision-making. Specific responsibilities are set forth in our Corporate Governance Principles<sup>1</sup> and each committee's charter.<sup>2</sup>

## Board Oversight

### Sustainability Governance

At MPC, our performance, risks and opportunities related to ESG topics, such as climate change, are identified and managed by company leadership with the oversight of our Board.

The Board has four standing committees, each of which is responsible for specific areas of oversight and policy decision-making. Our executive leadership team has primary responsibility for sustainability strategies and standards. Sustainability is embedded in several cross-functional leadership committees that help ensure our objectives are incorporated into company standards, metrics and sustainability strategies. These are, in turn, cascaded throughout the organization. These standards and strategies are developed by committees of the executive leadership team and aligned with related procedures and plans at the operational level.

Collaboration and communication among the Board, its committees and MPC leadership are critical to maintaining our aligned direction on sustainability matters.

## BOARD OF DIRECTORS

### Audit Committee

*Responsibilities and Oversight:*

- Oversees risks associated with financial, financial reporting and accounting matters
- Monitors compliance with regulatory requirements and internal control systems
- Oversees our enterprise risk management process and reviews performance
- Reviews ESG and climate risk disclosures within the financial reporting framework
- Oversees business continuity, data privacy and cybersecurity risks

### Compensation and Organization Development Committee

*Responsibilities and Oversight:*

- Oversees risks associated with our compensation programs, plans and policies to ensure they do not encourage excessive risk-taking
- Oversees our management succession planning process and our human capital management strategies and policies, including DE&I initiatives
- Oversees stakeholder engagement on compensation and human capital management matters

### Corporate Governance and Nominating Committee

*Responsibilities and Oversight:*

- Oversees risks associated with corporate governance matters, including director independence, Board composition and succession, and Board effectiveness
- Oversees the evaluation of the Board, its committees and individual directors
- Oversees stakeholder engagement on corporate governance matters

### Sustainability and Public Policy Committee

*Responsibilities and Oversight:*

- Oversees risks and opportunities associated with sustainability, ESG and public policy matters
- Reviews our sustainability and climate reports and other key sustainability disclosures
- Oversees establishment of our sustainability targets
- Oversees governance framework and budgets for our political contributions and lobbying expenditures
- Oversees stakeholder engagement related to sustainability, ESG and public policy matters

## MPC EXECUTIVE LEADERSHIP TEAM

Sustainability is embedded across executive committees with responsibility for sustainability strategies and standards

- External Policy Committee
- HES&S Management Committee
- Enterprise Risk Management Committee
- Strategic Steering Committee

## LEADERSHIP TEAM

Drives sustainability strategies across the enterprise

- ESG and Sustainability Working Group
- HES&S Planning Committee
- Renewables & Low Carbon Strategy Council

## CROSS-FUNCTIONAL TEAMS

Implement key sustainability strategies, programs and plans

- Environmental Justice Team
- Renewables Compliance Governance Committee
- Embedding and Communicating ESG Team
- Focus on Water Team
- Focus on Energy Team

<sup>1</sup> Our Corporate Governance Principles are available at <https://www.marathonpetroleum.com/Investors/Corporate-Governance/>

<sup>2</sup> Committee charters are available at <https://www.marathonpetroleum.com/About/Board-of-Directors/>

# Risk Management

## Enterprise Risk Management (ERM) Program

Enterprise Risk Management is how we identify, assess and manage enterprise-level risks, and review the effectiveness of risk-mitigation strategies. Enterprise-level risks include ESG, such as climate- and compliance-related risks, as well as those risks described in our most recent Annual Report on Form 10-K and other filings with the U.S. Securities and Exchange Commission.

## ERM Process

Our ERM process is continuous and dynamic to help us identify emerging risks that may impact our ability to operate and efficiently allocate resources. The process involves a cross-functional review of potential enterprise-level risks, including sustainability risks. Our enterprise risk manager leads the process through quarterly leadership workshops that involve key leaders with responsibility for our sustainability priorities. Our risk analysis includes an examination of the causes and consequences of each enterprise-level risk, as well as the development of strategies to mitigate risks, and position the company to capitalize on new opportunities.

## ERM Community

We have formed an ERM community to support the ERM workshops. It comprises mid-level risk and assurance representatives across our value chain and meets quarterly to discuss, develop, standardize and integrate risk management best practices throughout the company to support risk-based decision-making.

The Board and executive leadership team routinely review and discuss enterprise-level risks and strategies, and the Board’s Audit Committee further reviews our ERM process and performance trends and oversees internal processes to evaluate their effectiveness.

## Climate-Related Risk

We carefully review, evaluate and manage climate-related risks and opportunities to ensure our ability to adapt and strengthen our resiliency. These include both transitional and physical risks, which we regularly discuss with the Board’s Audit and Sustainability and Public Policy Committees and executive and senior leadership committees.

## Compliance-Related Risk

As part of our ERM process, our Board oversees risks related to the regulatory landscape, including emerging and proposed regulations related to issues that have the potential to impact our business, such as greenhouse gas and other air emissions, water withdrawals and effluents, hazardous materials management, product specifications, and employee health and safety.

## Identification and Disclosure of Risks

We disclose risks to our company in the Risk Factors section of our Annual Report on Form 10-K and other filings that are filed with the U.S. Securities and Exchange Commission. Categories of risk described in these reports include:

- Business and Operational Risks
- Financial Risks
- Legal and Regulatory Risks
- Strategic Transaction Risks
- General Risk Factors

### The evolution of our climate-related disclosures and metrics helps demonstrate the effectiveness of our corporate governance process

	2023	2022	2021	2020	2019	2018	2017
Absolute scope 3 - category 11 GHG Emissions Reduction Target	✓	✓					
Scope 3 GHG Emissions Disclosure	✓	✓	✓				
CDP Disclosure <sup>1</sup>	✓	✓	✓				
Freshwater Withdrawal Intensity Target	✓	✓	✓				
Third-Party GHG Emissions Verification	✓	✓	✓	✓			
MPLX G&P Methane Intensity Reduction Target	✓	✓	✓	✓			
Scope 1 & 2 GHG Emissions Intensity Reduction Target	✓	✓	✓	✓			
TCFD Disclosure	✓	✓	✓	✓	✓	✓	✓










<sup>1</sup> Available at [cdp.net/en](https://www.cdp.net/en)

# Planning for the Energy Evolution

The evolving energy landscape has provided MPC opportunities to invest in the gathering and processing of natural gas, renewable diesel, ethanol and renewable natural gas. We are also evaluating other decarbonization opportunities, such as the deployment of carbon capture, utilization and sequestration (CCUS); renewable electricity; and low-carbon hydrogen and ammonia. Additionally, we continue to position our important petroleum refining and logistics business to be successful under a variety of lower-carbon scenarios. The scale of our integrated system of petroleum refineries, renewable facilities, pipelines, terminals, and transport fleet provides many competitive advantages, from procuring advantaged feedstocks to delivering a variety of products to match demand anywhere in the world.

In simple terms, we continue to invest in improving the competitiveness and efficiency of our core business to produce and deliver the fuels and products the world demands. From our core business, we generate cash to return to shareholders and to invest in other evolving areas like renewable diesel, ethanol, and renewable natural gas where we can leverage our expertise for long-term growth. This strategy is consistent with the range of IPCC 1.5 degree scenarios and has already resulted in a shift to our asset portfolio, significantly reducing our carbon exposure and scope 1, 2 and 3 GHG emissions.

In addition, in 2022 MPC received the ENERGY STAR Partner of the Year — Sustained Excellence award from the U.S. Environmental Protection Agency for the fourth straight year, and six of our refineries achieved ENERGY STAR certification, meaning they are in the top quartile for energy efficiency in the U.S. So long as there is demand for refined petroleum products, MPC’s refineries can make them more efficiently than many other refineries around the world, and we will continue to invest to advance that end. We have adopted several corporate climate-related targets aligned with this strategy as explained on Page 10. Each of these targets plays an important role in capital allocation as described on Page 9.

	<b>Core Business</b> Petroleum Refining and MPLX Logistics	<b>Natural Gas</b> MPLX Natural Gas G&P	<b>Renewable Fuels</b> and Low-Carbon Solutions
<b>Growth Opportunity</b>			
<b>HISTORIC</b>			
<b>FUTURE</b>			
<b>2023 Asset Base</b>	<ul style="list-style-type: none"> <li>2.9 million bpd crude oil refining capacity</li> <li>13 petroleum refineries</li> <li>19,000 miles of pipeline owned, leased or have JV interest</li> <li>40.3 million barrels of terminal storage capacity</li> <li>319 marine vessels and barges owned and operated</li> <li>537 transport trucks owned and operated</li> <li>~12,800 rail tank cars we own lease and operate</li> <li>2 strong brands (Marathon and ARCO)</li> </ul>	<ul style="list-style-type: none"> <li>34 gas processing facilities</li> <li>136 compressor stations</li> <li>12 billion scf per day of natural gas processing capacity</li> <li>852,000 bpd of natural gas liquid fractionation capacity</li> </ul>	<ul style="list-style-type: none"> <li>~400 million gallons of biofuels manufactured (~800 million gallons expected by 2024)</li> <li>4 JV ethanol facilities</li> <li>2 renewable diesel facilities (1 JV)</li> <li>2 renewable pretreatment facilities</li> <li>1 JV soybean crushing facility</li> <li>1 Virent, Inc. demonstration R&amp;D facility</li> <li>1 JV renewable natural gas company</li> </ul>
<b>Carbon Intensity</b>	Higher	Medium	Lower
<b>Long-term Societal Indicators</b>	<b>Petroleum-Based Transportation Fuels</b>  Expected to decrease	<b>Gas Processing Capacity</b>  Expected to remain steady	<b>Renewable Energy Production</b>  Expected to increase



# Business Planning and Capital Allocation

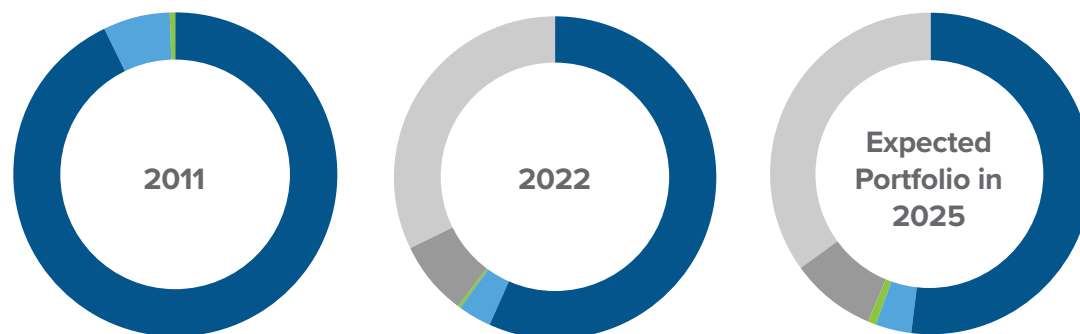
At MPC and MPLX, we invest to strengthen the competitive position of our assets, increase our resilience and support the energy evolution. As shown to the right, we have undergone a significant evolution since becoming an independent company in 2011. Today we are focused on optimizing our core refining and logistics portfolio, expanding our natural gas business and investing capital in renewable energy and low-carbon solutions.

Our risk-based capital allocation strategy is designed to ensure strict capital discipline and long-term competitive returns for our shareholders. We require higher return-on-investment (ROI) thresholds for projects with greater financial and regulatory uncertainty than those with more stable cash flow and lower regulatory risk. The ROI thresholds are highest for refining investments. This has the effect of a de facto carbon price because refining projects, with the highest carbon exposure, must overcome a much higher hurdle rate than, for instance, investments in our MPLX G&P natural gas business, with lower carbon exposure. Projects are also individually evaluated against our long-term price forecast, which considers the demand projections from various Paris-aligned scenarios along with our four climate-related targets. This process has contributed to the significant shift in our manufacturing outputs shown to the right.

Our 2023 capital outlook projects ~40%<sup>1</sup> of MPC's growth capital is expected to be directed toward renewables and carbon-reduction projects. These projects include the remainder of MPC's 50% share to complete the \$1.2 billion conversion of our Martinez refinery into a renewable diesel facility, the investment of \$56 million to form a joint venture focused on renewable natural gas (RNG) and strategic investments to modernize and reduce nearly 1 million tonnes of scope 1 and 2 GHG emissions at our Los Angeles refinery. For MPLX, the majority of growth capital is being directed to the expansion and optimization of our natural gas and natural gas liquids business.

<sup>1</sup> ~\$230 million is allocated to increase renewable fuels production and ~\$120 million is allocated to implement projects at the Los Angeles refinery that will reduce emissions and oxides of nitrogen and scope 1 and 2 GHG emissions. Does not include MPLX capital allocation.

**Evolution of MPC and MPLX Processed Volume Product Portfolio**  
Based on energy content of products



	2011	2022	2025E
Petroleum-based fuel	92.9%	56.7%	52%
Natural gas	0.0%	32.0%	35%
Natural gas liquids	0.0%	7.6%	8%
Nonenergy petroleum products	6.7%	3.3%	4%
Renewables	0.4%	0.4%	1%

## Considerations for Capital Allocation



Risk-based ROI thresholds and long-term price forecast that incorporate Paris-aligned scenarios



- SCOPE 1 & 2 INTENSITY
- SCOPE 3 - CATEGORY 11
- METHANE INTENSITY
- FRESHWATER WITHDRAWAL INTENSITY

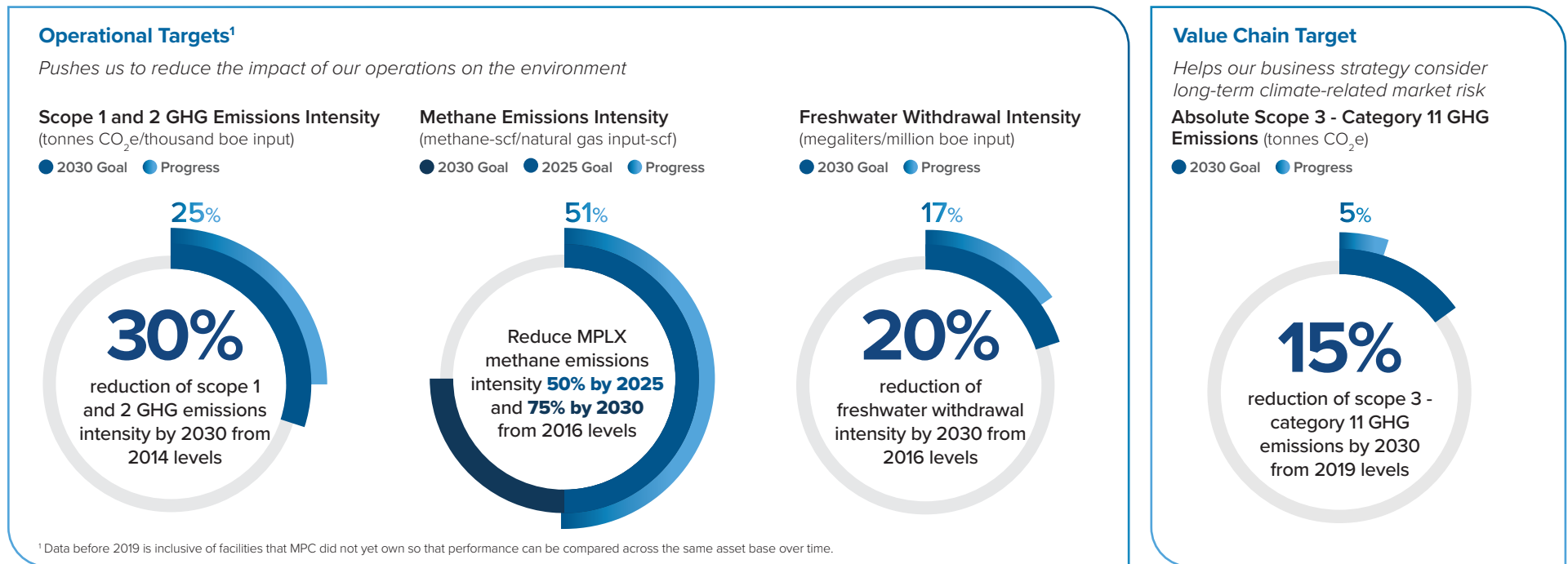
Climate-related target assessment

# Climate-Related Metrics and Targets

The suite of targets below helps measure progress with our climate strategy and risk management processes. We assess progress with these targets on an annual basis and may modify them or adopt new metrics as we achieve our goals or new sources of information come to light. Our performance to date, has resulted in real, sustainable emissions reductions and significant investment in the energy evolution. For instance, since 2019, we have reduced absolute scope 1, 2 and 3 GHG emissions by more than 25 million tonnes per year on a sustainable basis.

We are planning to take the following actions relating to our metrics between now and the end of 2024:

- Increase our scope 1 and 2 GHG emissions intensity target through at least 2035. Please see Page 11 for more information.
- Evaluate potential adjustments to our absolute scope 3 - category 11 target given the wide variability in demand for our products being modeled in 1.5 degree scenarios, the relative strength of our assets compared to the global refining sector, and the significant uncertainty surrounding scope 3 accounting and the use of offsets or divestments in light of the pending U.S. Securities and Exchange Commission climate disclosure rules and other future regulations and guidance. Please see Page 12 for more information.
- Evaluate potential adjustments to our methane targets as we complete initiatives to incorporate a more measurement-based inventory. Please see Page 13 for more information.



We utilize several reporting protocols and guidance documents to develop and compute our GHG emissions and targets, including: U.S. EPA's Mandatory Greenhouse Gas Reporting Rule reporting protocols (40 CFR Part 98), the Science Based Targets initiative (SBTi), Greenhouse Gas Protocol, and Ipeca's petroleum industry guidelines for reporting greenhouse gas emissions. Beginning in 2020, an independent third party, LRQA, has validated our GHG data and emissions calculation methodologies related to the above metrics. This comprehensive review and assurance promotes accurate disclosures that align with accepted reporting practices. The latest assurance statement can be found at [https://www.marathonpetroleum.com/content/documents/Responsibility/Reports\\_Policies/2023/2022\\_LRQA\\_Assurance\\_Statement.pdf](https://www.marathonpetroleum.com/content/documents/Responsibility/Reports_Policies/2023/2022_LRQA_Assurance_Statement.pdf).

# Scope 1 and 2 GHG Emissions Intensity Target

In 2020, we adopted a companywide manufacturing scope 1 and 2 GHG emissions intensity reduction target to reduce our intensity 30% below 2014 levels by 2030. The metric is computed by aggregating the scope 1 and 2 GHG emissions across all our organizations divided by total manufacturing inputs.

Because our manufacturing sites entail a wide range of inputs, including but not limited to crude oil, natural gas, natural gas liquids and renewable feedstocks, we normalized these manufacturing inputs on a common energy unit known as barrels of oil equivalent (boe).

We have achieved a significant reduction through multiple initiatives, including our Focus on Energy program, the acquisition and expansion of our MPLX G&P business, along with our growth in renewable fuels. In fact, we increased the percentage of natural gas, natural gas liquids and renewable feedstocks to our manufacturing sites from less than 1% in 2011 to ~40% by the end of 2022.

We have achieved significant energy, greenhouse gas reductions and costs savings through our Focus on Energy program, including avoiding the equivalent of over 2 billion BTU/hour of energy use and over \$100 million in 2022. This is roughly the same amount of energy used by over 100,000 homes or taking 200,000 gasoline-powered passenger vehicles off the road.<sup>1</sup> As a four-time EPA ENERGY STAR® Partner of the Year — Sustained Excellence award recipient, we are an active participant in the program, sharing our strategies and successes with other industrial companies.

<sup>1</sup> EPA, Greenhouse Gas Equivalencies Calculator, available at <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

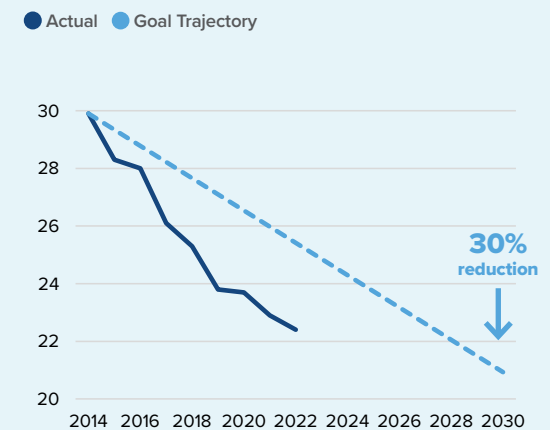
Some other notable items related to our 2022 scope 1 and 2 emissions are as follows:

- Since 2014, our Refining scope 1 and 2 emissions have decreased on an absolute basis by over 10% while absolute companywide scope 1 and 2 emissions have decreased by nearly 5%, even with the expansion of our MPLX G&P and renewable fuels business.
- Since 2019, our companywide scope 1 and 2 GHG emissions have decreased by over 10% on an absolute basis.
- Six refineries (Anacortes, Washington; Canton, Ohio; Detroit, Michigan; Garyville, Louisiana; Robinson, Illinois; St. Paul Park, Minnesota) received 2022 ENERGY STAR certifications for energy efficiency for being in the top 25% of similar facilities nationwide. This set a record for the most certified refineries from a single petroleum refining company in one year. We have reduced our scope 1 and 2 GHG intensity for the eighth straight year, achieving a 25% reduction since 2014.
- Four MPLX terminals (Cincinnati, Ohio; Jackson, Michigan; Lansing, Michigan; Muncie, Indiana) achieved the ENERGY STAR Challenge for Industry in 2022 by reducing their energy intensity by over 20% within a five-year period. We now have 10 terminals that have achieved the challenge.
- In 2022, we also submitted an energy challenge application for our Bluestone gas processing facility in Pennsylvania, making it the first gas plant to enter the challenge.

Overall, this metric is a direct measure of our climate performance and helps us assess our progress with our energy evolution initiatives. By the end of 2024, we plan to increase this target through at least 2035 because we are on track to reach our existing goal prior to 2030.

**We have reduced our scope 1 and 2 GHG intensity for the eighth straight year for a 25% reduction since 2014**

**Companywide Scope 1 and 2 GHG Emissions Intensity** (tonnes CO<sub>2</sub>e/thousand boe input)



MPC energy team members attending the ENERGY STAR Partner of the Year Award ceremony in Washington D.C.

# MPC's Evolving View of Scope 3 Emissions

MPC's absolute scope 3 - category 11 emissions target is related to production from our petroleum refining assets. When we established the target, we considered criteria provided in draft guidance from the Science Based Targets initiative (SBTi) for the Oil and Gas Sector<sup>1</sup> which recommends:

- A target baseline within the five-year period prior to establishing the target.
- Absolute targets are preferred.
- A scope 3 target should be consolidated by equity share and entail at least 67% of all categories of scope 3 emissions. As identified in our CDP disclosures, MPC's scope 3 - category 11 emissions entail more than 70% of our total calculated scope 3 emissions.
- Target(s) should be based upon one of three operational segments: 1) Exploration and production, 2) Refined product yields, or 3) Marketing. Our refinery yields were selected as the basis for our target because they represented the largest scope 3 - category 11 emissions of the three potential segments.

Since 2019, we have achieved an approximate 5% -11% annual reduction of scope 3 - category 11 emissions from our refineries depending on utilization. This excludes 2020 data which is not representative of a normal year because production was impacted by COVID-19 lockdowns.

To date, the reductions are primarily from the decisive action we took in 2020 to cease crude oil processing at three refineries that were providing marginal returns and facing future regulatory expenditures. Two of these facilities have subsequently been repurposed to produce renewable diesel, helping to reduce CO<sub>2</sub> emissions in hard-to abate sectors such as heavy-duty shipping.

Additional reductions beyond what we have already achieved since 2019 would require MPC to:

- Reduce production of petroleum-based fuels from our refineries,
- Utilize carbon reduction offsets or credits,
- Sell to a customer that captures and sequesters the CO<sub>2</sub> released during product use, or
- Use other means to achieve targets.

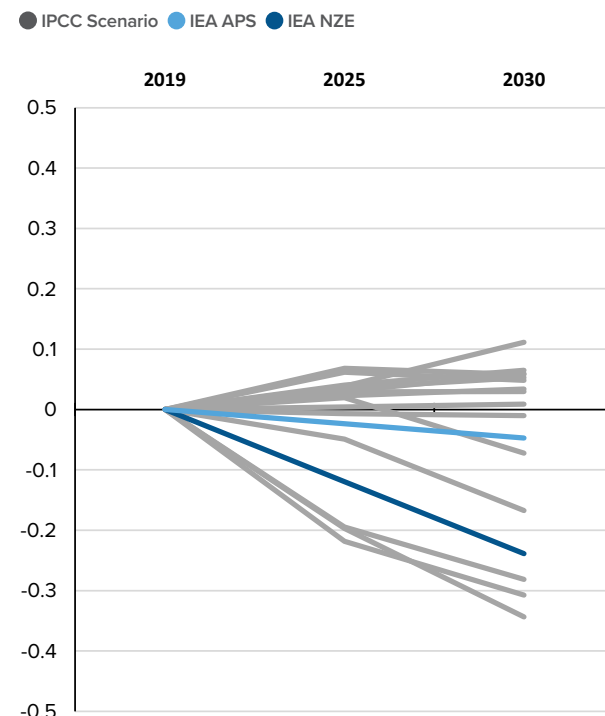
There are often conflicting expectations and priorities from regulatory authorities, investors, voluntary reporting frameworks and other stakeholders that are increasing uncertainty surrounding scope 3 accounting and disclosure. For instance, there is significant uncertainty surrounding how the U.S. Securities and Exchange Commission climate disclosure rule will be implemented related to the utilization of carbon offsets or credits, the treatment of divestments, and other means to achieve targets.

There is also significant uncertainty how the world will progress toward the Paris Agreement's objective to limit global warming. As shown to the right, there are many different 1.5 degree scenarios with varying levels of oil demand in 2030. In scenarios with steep reductions in oil demand through 2030, we would expect there to be refinery rationalization to match demand. In other scenarios, with modest oil demand reductions or even increases, voluntary reductions would simply result in the demand being met by other refiners, many of which are less energy efficient than MPC. Thus, reducing scope 3 - category 11 emissions of one company without addressing demand is not likely to reduce overall GHG emissions.

Because of these and other factors, future adjustments to our scope 3 - category 11 target may be necessary.

## Changes in Oil Demand under Various 1.5 degree modelled Scenarios

Scenario variability supports a range for a scope 3 - category 11 target



IPCC scenario refers to one of 16 vetted IPCC scenarios, identified by the IEA, that reach net-zero energy sector emissions by 2050 (IEA, World Energy Outlook 2022 p. 131-132; International Institute for Applied Systems Analysis, 2022).

<sup>1</sup> SBTi, Guidance on setting science-based targets for Oil, Gas and Integrated Energy companies (Aug. 10, 2020); SBTi, How to Guide for Setting Science Based Targets, Version 2.0 (December 2021).

# Methane Emissions Intensity Reduction Target

Methane has a higher global warming potential than carbon dioxide, albeit with a much shorter lifespan in the atmosphere. As a result, the near-term reduction in methane emissions is a high priority for meeting society’s GHG emissions reduction goals over the next five to 15 years.

We remain focused on reducing methane emissions across our gathering and processing (G&P) assets using the following initiatives and targets:

## Pursuit of Measurement-Based Inventory

We continue to pursue more measurement-based methane emissions data from our G&P assets to supplement the methane emissions inventory mandated by U.S. EPA’s Mandatory GHG Reporting Rule (40 CFR Part 98). As outlined in last year’s report, we performed an extensive amount of monitoring and verification of methane emissions across our G&P assets through our involvement in the Environmental Partnership and collaboration with Cheniere Energy, Inc. See Page 15 for more information.

This enhanced monitoring generally confirmed our methane emissions inventory with one notable exception. Stack testing of nearly half of our large gas-fired compressors revealed methane slip above existing EPA emission factors. This has emerged as a common finding from enhanced monitoring efforts within the midstream sector. Methane slip refers to the natural gas fuel that is not fully combusted in a compressor engine and released through the exhaust stack. The higher measured concentrations are expected to entail an increase of ~20,000 metric tons per year in our baseline and annual reported methane emissions.

As a result, we are evaluating ways to reduce the methane slip from compressors through potential retrofits and optimization.

Some additional methane verification measures we are implementing across our G&P assets include routine monitoring of our compressor stations using optical gas imaging, pilot testing continuous fence line methane monitoring systems and participating in a West Virginia University study of storage tank emissions within the Marcellus Shale region.

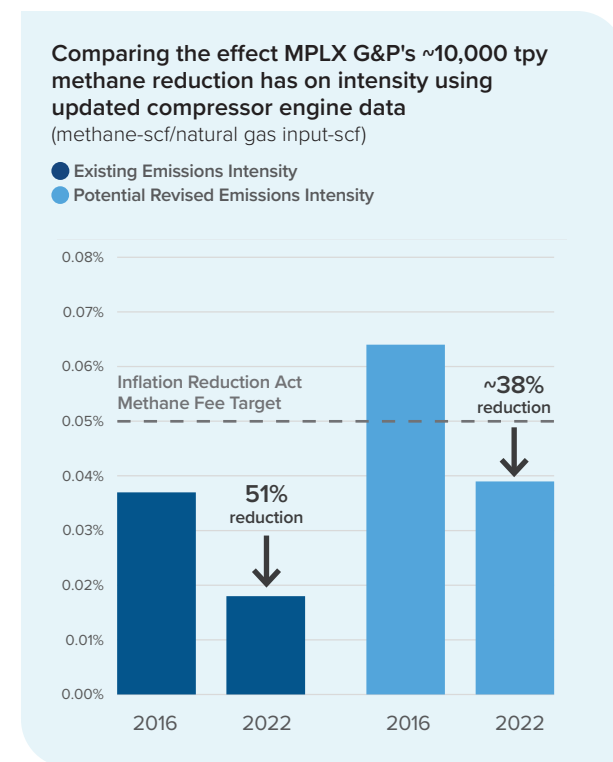
**Higher methane emissions from gas-fired compressor engines have emerged as a common finding from the enhanced monitoring efforts within the midstream sector. In response, the U.S. EPA recently issued proposed revisions in its GHG reporting rule which are expected to be finalized in late 2023.<sup>1</sup>**

## Reducing Methane Emissions from Our Operations

As shown to the right, since 2016, we have implemented measures that have achieved ~10,000 metric tons per year of methane emissions reductions through our Focus on Methane program. Even using the proposed factors, we remain a very efficient operator with performance well below the methane intensity target established by the Inflation Reduction Act<sup>2</sup>. Additional details regarding our achieved and planned methane emissions reductions can be found on the next page. We estimate expenditures ranging from \$20 million to \$30 million to achieve the planned methane emissions reductions by 2030.

## Methane Emissions Intensity Targets







As a result of new data and revised emissions factors for select equipment, we plan to update our methane targets in 2024 to reflect changes in the assumptions that were used to set our targets. This additional time will allow us to perform further testing of compressors and evaluate ways to reduce methane slip from the compressors.



<sup>1</sup> See U.S. EPA, Proposed Rule: Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems, (Pre-publication version issued June 30, 2023).

<sup>2</sup> Inflation Reduction Act of 2022, H.R. 5376, 117th Cong. (2022).

# Focus on Methane

MPLX Focus Areas for Methane Reductions	Reductions Achieved Since 2016 (tonnes per year)	Additional Reductions Expected Through 2030 (tonnes per year)
 <p><b>Pneumatic Devices</b></p> <ul style="list-style-type: none"> <li>Over 80% of 25,000+ pneumatic controllers are already powered by compressed air</li> <li>Eliminate all ~340 high-bleed natural gas-driven controllers from service (completed 2022)</li> <li>Convert ~3,100 remaining natural gas-driven control valves to compressed air or other zero or near-zero methane emissions technology</li> <li>Route emissions from ~1,100 gas-driven pumps to control devices or convert to compressed air or other zero or near-zero methane emissions technology</li> </ul>	~2,500	~8,000
 <p><b>Pipeline Launchers and Receivers</b></p> <ul style="list-style-type: none"> <li>Controlled existing pipeline launchers and receivers that are opened frequently</li> <li>Designed new installations with a smaller launcher/receiver chamber</li> <li>Modified purging practices to reduce venting events</li> </ul>	~1,000	Sharing technology with natural gas industry to reduce others' emissions
 <p><b>Fugitive Leak Detection and Repair (LDAR)</b></p> <ul style="list-style-type: none"> <li>Implementing LDAR programs at all compressor stations</li> <li>Implementing LDAR programs at facility types not expected to be covered by EPA's proposed regulations</li> </ul>	~500	~1,000
 <p><b>Control Reciprocating Compressor Emissions</b></p> <ul style="list-style-type: none"> <li>Install monitoring ports and complete periodic monitoring on ~1,000 reciprocating compressors to proactively replace rod packing when warranted</li> <li>Install low-emissions rod packing and measurement ports on 50% of reciprocating compressors by the end of 2023, 75% by the end of 2024, and 100% by the end of 2025</li> <li>Explore ability to reduce methane slip</li> </ul>	~1,000	~5,000
 <p><b>Maintenance Venting and Other Controls</b></p> <ul style="list-style-type: none"> <li>Optimize necessary maintenance venting and blowdowns to reduce emissions going to the atmosphere, including using vapor recovery units and/or portable flares</li> <li>Install additional controls where appropriate (e.g., select tanks)</li> <li>Install flare monitoring and control systems to improve combustion efficiency where appropriate</li> </ul>	~5,000	~1,000
 <p><b>Advancing Measurement and Quantification Technology</b></p> <ul style="list-style-type: none"> <li>Analyze methane emissions data from Fourier-transform infrared spectroscopy (FTIR) testing performed</li> <li>Employ advanced monitoring technologies, such as satellite imagery, flyovers and drones, to identify leaks and inform emissions calculations</li> <li>Pilot continuous measurement systems, such as fenceline monitors, to conduct more frequent and real-time monitoring</li> </ul>	---	TBD
<b>Total</b>	<b>~10,000</b>	<b>~15,000</b>



MPLX participates in The Environmental Partnership, a coalition of nearly 100 oil and natural gas companies committed to continuously improving environmental performance in members' operations across the country. The Environmental Partnership provides a platform for the industry to collaborate with stakeholders and share best practices and new technologies. Its goals are consistent with the aims of our Focus on Methane program. Specifically, partners commit to the following:

- A program to install or retrofit gas-driven pneumatic controllers with lower- or zero- bleed methane emissions devices
- A leak detection and repair program for natural gas and oil facilities
- A program to reduce emissions from compressors
- A program to reduce emissions from pipeline blowdowns and flaring

More information on The Environmental Partnership is available at <https://theenvironmentalpartnership.org/>

## QMRV

### Quantification, Monitoring, Reporting and Verification

In 2022, MPLX began a collaboration with Cheniere Energy, Inc. (Cheniere) and other natural gas midstream companies, methane detection technology providers and leading academic institutions to implement quantification, monitoring, reporting and verification (QMRV) of GHG emissions at natural gas gathering, processing, transmission and storage systems specific to Cheniere's supply chain. The program is intended to improve the overall understanding of GHG emissions and further the deployment of advanced monitoring technologies and protocols. The QMRV program supports Cheniere's Cargo Emissions Tag (CE Tag) initiative to provide GHG emissions data to customers for liquefied natural gas (LNG) cargoes, a critical first step for the industry to quantify GHG emissions, enhance transparency and, over time, look for reduction opportunities to maximize the climate benefits of LNG.

The midstream QMRV work is being conducted by emissions researchers from Colorado State University and the University of Texas. The measurement protocol designed by the research group and Cheniere is being field tested at MPLX facilities that are part of Cheniere's supply chain.

The midstream QMRV program involves a combination of ground-based, aerial and drone-based emissions monitoring technologies. The midstream QMRV program requires emissions monitoring over at least a six-month period, with all data independently analyzed and verified by the project's academic partners.

By participating in the program, MPLX is gaining expertise in advanced monitoring techniques and technologies we can leverage to further reduce methane emissions throughout our vast gas gathering and processing network.

# Freshwater Withdrawal Intensity Reduction Target

Fresh water is vital to society and our operations. It is used to add heat to our manufacturing process (as steam), remove heat from the process (as cooling water), remove impurities from crude oil, protect equipment from corrosion, control emissions and clean equipment during maintenance activities.

Water availability is a major concern throughout much of the world, including parts of the United States. Population growth, together with a changing climate, could further exacerbate global water stress. As shown on Page 34, our Los Angeles refinery and Martinez Renewable Fuels facility are located in areas designated as high for water risk as defined by the Global Reporting Initiative and World Resources Institute assessment tools

To manage risk surrounding freshwater use in 2020, we adopted a formal Focus on Water program. The program is designed to assess site freshwater use, understand and mitigate water risks and identify opportunities to reduce freshwater use.

We have implemented the Focus on Water program at all of our refineries and are paying special attention to our plants located in California and Texas where water stress is higher than our other locations. Highlights from 2022 include:

- **Los Angeles Refinery:** 35 million gallons of fresh water per year saved via condensate recovery and wet gas compressor repair projects.
- **El Paso Refinery:** 25 million gallons of fresh water per year saved by increasing boiler cycles of concentration and reducing hydrotest water.
- **Galveston Bay Refinery:** 350 million gallons of fresh water per year saved by optimizing a reverse osmosis system and replacing FCC blowdown valves.

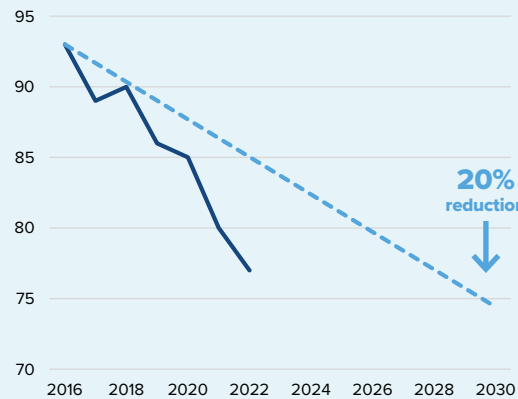
- **Martinez Renewable Fuels:** Our Martinez facility was recently converted to a renewable diesel facility from a petroleum refinery. Phase 1 of the project was completed in the first quarter of 2023, and the final two phases are expected to be operational by the end of 2023. At full capacity, this facility will use approximately 1 billion fewer gallons of fresh water per year than when it operated as a petroleum refinery.

To ensure success of the program, we established a companywide target to reduce freshwater withdrawal intensity 20% by 2030 from 2016 levels. To date, we have achieved a 17% reduction in intensity below 2016 levels.

## 2022 marks the sixth year we reduced our freshwater withdrawal intensity

### Freshwater Withdrawal Intensity (megaliters/million boe input)

● Actual ● Goal Trajectory



Employees at our Martinez Renewable Fuels facility.



# Business Strategy and Climate-Related Scenario Planning

The energy landscape is continually evolving to solve the complex issues of energy security and climate change. Whether it is the significant investment in research and development of low-carbon energy technologies, or the many competing policies and strategies put forth at all levels of government to decarbonize the economy and increase energy security, we conduct scenario planning to evaluate how differing future energy outcomes could affect our company. We continually evaluate the climate-related risks and opportunities associated with these different scenarios to understand where we should invest capital to strengthen our existing assets and where to invest in potential new growth opportunities. Our goal is to remain nimble and implement a disciplined capital strategy that will succeed under a variety of credible potential future outcomes.

Our scenario planning includes evaluating both long-term and short-term scenarios. Throughout this section, we provide detailed analyses of our business strategies against future scenarios from the IEA, the U.S. Energy Information Administration (EIA), the IPCC and data from other sources, such as HSB Solomon Associates LLC (Solomon).<sup>1</sup>

Scenarios are not forecasts or predictions of the future. Rather, they highlight central elements of a possible future and draw attention to key factors that could drive future developments. It is important to remember that scenarios are hypothetical constructs; they are not sensitivity analyses. Instead, they aim to provide governments, companies and other stakeholders with a range of potential outcomes to consider. Scenarios provide our company with several versions of the future so we can plan ahead and adjust appropriately as the future unfolds. In this year's report, we apply the following hypothetical scenarios:

- **IEA Announced Policies Scenario (APS)** — assumes that all long-term emissions and energy access targets, including net-zero commitments, will be met on time and in full, even where policies are not yet in place to deliver them.
- **IEA Net-Zero Emissions by 2050 (NZE)** — sets out a pathway for the global energy sector to achieve net-zero CO<sub>2</sub> emissions by 2050, updating the landmark IEA analysis first published in 2021. While the APS is exploratory, the NZE Scenario is normative, as it is designed to achieve the stated objective and show a pathway to that goal.
- **IPCC Scenarios** — refers to the 16 vetted IPCC scenarios, identified by the IEA, that reach net-zero energy sector emissions by 2050. Because they reach net-zero energy sector emissions by 2050, they are comparable in terms of energy sector ambition with the IEA NZE Scenario. A comparison between these IPCC assessed scenarios and the IEA NZE Scenario is provided on Page 5. (IEA, World Energy Outlook 2022 p. 131-132; International Institute for Applied Systems Analysis, 2022).

<sup>1</sup> HSB Solomon Associates is uniquely qualified to perform this analysis because it has cost and production data for more than 320 refineries worldwide through its biennial fuels studies. <https://www.solomoninsight.com/industries/refining/benchmarking/fuels-study> The biennial HSB Solomon Associates Fuels Studies are a key resource we use to benchmark our operations and conduct scenario analyses.



Our natural gas facility in Hopedale, Ohio.

# Potential Risks and Opportunities

MPC and MPLX face the following key climate-related risks and opportunities:

## **Potential Transitional Risks**

### **Policy and Legal Risks**

- Regulations (e.g., fuel economy standards, renewable energy mandates) could reduce demand for the petroleum-based transportation fuels we manufacture in our refineries and could reduce demand or increase the cost of operations for the natural gas we gather and process at our natural gas gathering and processing assets. Reduced demand for fossil fuels could also impact our logistics assets where we transport and store fossil fuel products via pipelines, terminals, ground transport and marine fleets.
- While we do not conduct hydraulic fracturing operations, we do provide gathering, processing and fractionation services with respect to natural gas and NGLs produced by our customers through such operations. In addition, our refineries are supplied in part with crude oil produced from unconventional oil shale reservoirs. As a result, any prohibitions on hydraulic fracturing or increased regulation of the upstream producers could affect our business.
- We could face increased climate-related litigation or delays in obtaining regulatory permits for projects that involve fossil fuels (e.g., pipeline or CCUS projects) with respect to our operations or products.

### **Technology Risks**

- Advances in battery technology and electric vehicle market penetration could reduce demand for traditional transportation fuels.
- Technology breakthroughs relating to renewable fuels or other fuel alternatives (e.g., hydrogen or ammonia), or efficiency improvements for internal combustion engines, could reduce demand for traditional transportation fuels.

### **Market Risks**

- Consumer preference could shift away from fossil fuels, reducing demand.
- There is potential reduced demand for transportation fuels due to changes to work, school and travel habits.

### **Reputational Risks**

- Controversies associated with carbon emissions could impact investor sentiment, affecting access to capital.

## **Potential Physical Risks**

### **Acute Physical Risks**

- The intensity of weather events, such as hurricanes, flooding, wildfires, snowstorms, drought, temperature extremes, or earth movement or changing subsurface conditions, could impact our operations.

### **Chronic Physical Risks**

- Sea-level rise or availability of fresh water could impact our operations.

## **Potential Opportunities**

### **Resource Efficiency**

- We consider energy efficiency to be a core business function and opportunity because it reduces costs and GHG emissions, enhancing long-term cost competitiveness.
- Reduced freshwater use intensity increases resiliency and reduces long-term operating costs.

### **Energy Source**

- The availability and procurement of lower-carbon or renewable energy to power our operations could further reduce the life-cycle carbon intensity of the fuels and products we manufacture.

### **Products and Services, Markets and Resilience**

- Continued coal-to-natural gas switching and production of blue hydrogen could increase demand for natural gas.
- Research and development of renewable fuels could provide new products and markets, increasing revenues.
- Domestic production, processing and export of LNG to Europe and other regions facing energy security issues may steadily increase as these regions look to secure energy from the United States.
- Increased demand for petrochemical feedstock and clean cooking fuel could strengthen demand for NGLs processed by our facilities.
- Our MPLX pipelines and rights of ways are potentially positioned to transport hydrogen and CO<sub>2</sub> as those markets develop.

# Climate Scenario Analysis for Refining and Marketing

## Scenarios

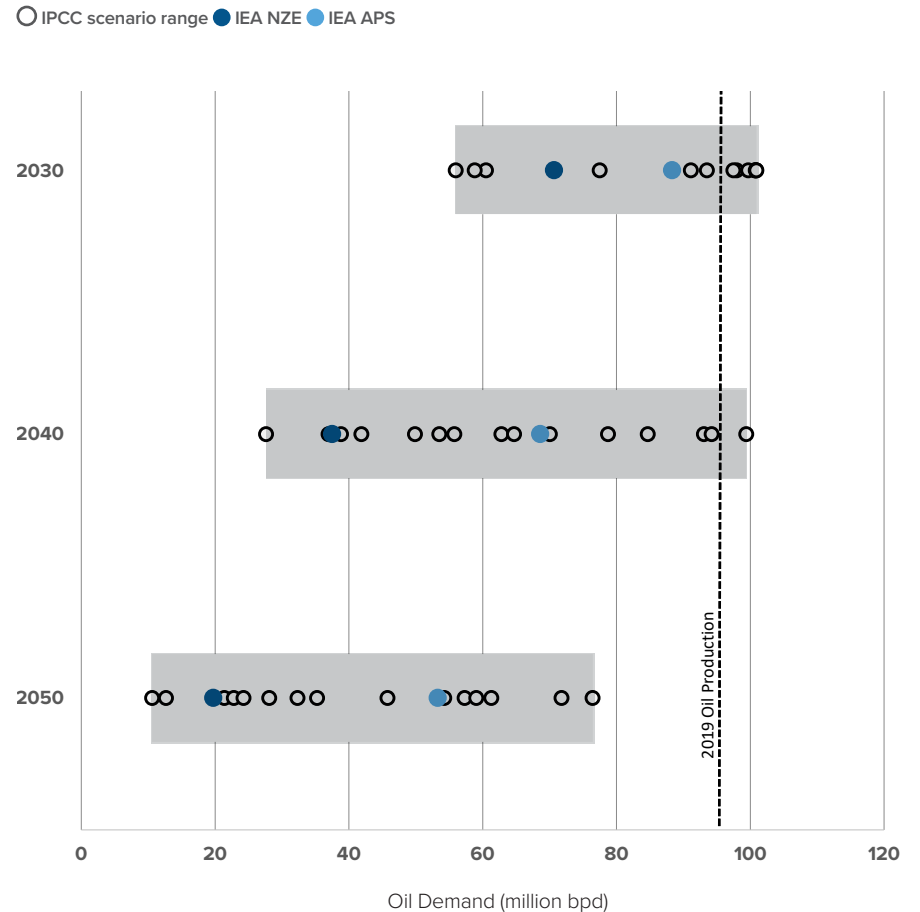
There are a multitude of possibilities for how the future energy system will evolve to address climate change and energy security. How the world decarbonizes is highly dependent on multiple factors, including technology innovation, geopolitical stability, and government policies and regulations. Today, oil provides 90% of the energy used for transportation. The refined products that we produce at our refineries and transport to consumers through our logistics network are critical to today's economy and expected to be critical for the foreseeable future even under many peer-reviewed and Paris-aligned climate scenarios.

We utilize scenario analyses to stress test our assets against many future energy systems that are different than today's. For this publication, we are including a variety of modeled scenarios that achieve the temperature outcomes of the Paris Agreement. As shown to the right, we have analyzed demand under the IEA APS and NZE scenarios along with 16 additional peer-reviewed IPCC scenarios.

## Transition Risks

MPC's refineries primarily produce liquid transportation fuels and petrochemical feedstocks. As shown to the right, the NZE Scenario represents a relatively extreme case for these products because it assumes demand for petroleum-based liquids in 2050 decreases by 79% relative to 2019. If the hypothetical NZE Scenario were to materialize, it would lead to significant rationalization of global refining capacity. However, we do not believe every company with petroleum refining or logistics assets would experience the same degree of rationalization. Refined products are commodities, and in commodity industries the most cost-efficient operator typically survives during periods of rationalization. Thus, it is important to take asset competitiveness into account when analyzing a scenario where declining demand leads to rationalization of an industry.

Oil Demand under Various Net-Zero Scenarios



Scenario	Range of Temperature Change by 2100 (°C)
IPCC Scenarios	1.5
IEA APS	1.7
IEA NZE	1.4

Source: IEA, World Energy Outlook 2022

Scenario	Oil Demand Change from 2019	
	2030	2050
IPCC Scenarios	-34% to +11%	-89% to -20%
IEA APS	-5%	-43%
IEA NZE	-24%	-79%

Source: IEA, World Energy Outlook 2022

# Climate Scenario Analysis for Refining and Marketing (continued)

MPC retained HSB Solomon Associates LLC (Solomon)<sup>1</sup> to evaluate the resiliency of our refining assets against the projections in the NZE and various other scenarios. As seen to the right, the U.S. refining industry has a lower overall cost structure than the rest of the world. This is, in part, due to less-expensive natural gas, which is a significant operating cost to refineries. This cost disparity has been widened by the disruption in energy markets caused by the Russian invasion of Ukraine.

Furthermore, MPC's refineries are cost advantaged within the United States. Recent actions that have contributed to the cost competitiveness include:

- Strengthening our portfolio by ceasing crude processing at three less-competitive refineries and repurposing two for renewable diesel production.
- Embarking on a journey in 2020 to strengthen the competitive position of our assets and improve commercial performance.
- Adhering to strict capital discipline to evaluate proposed growth projects against capital return thresholds and our longer-term climate targets.

Due to the cost competitiveness of our refining assets, we expect our refining system will remain resilient, even under carbon-constrained scenarios such as the NZE.

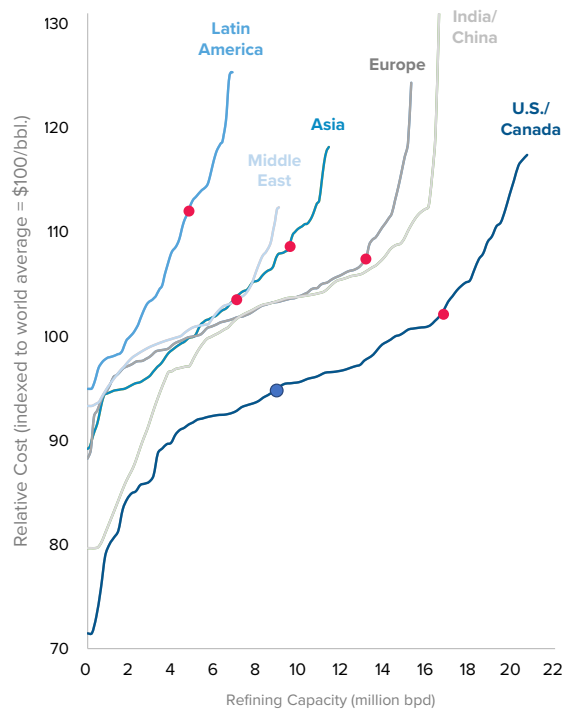
<sup>1</sup> HSB Solomon Associates is uniquely qualified to perform this analysis because it has cost and production data for more than 320 refineries worldwide through its biennial fuels studies. <https://www.solomononline.com/benchmarking/refining/fuels-study>. The biennial HSB Solomon Associates Fuels Studies is a key resource we use to benchmark our operations and conduct scenario analyses

## United States Refining Cost Advantage

Data includes 2018 (pre COVID) and 2020 (during COVID shutdowns)

### Global Refining Cost Curves

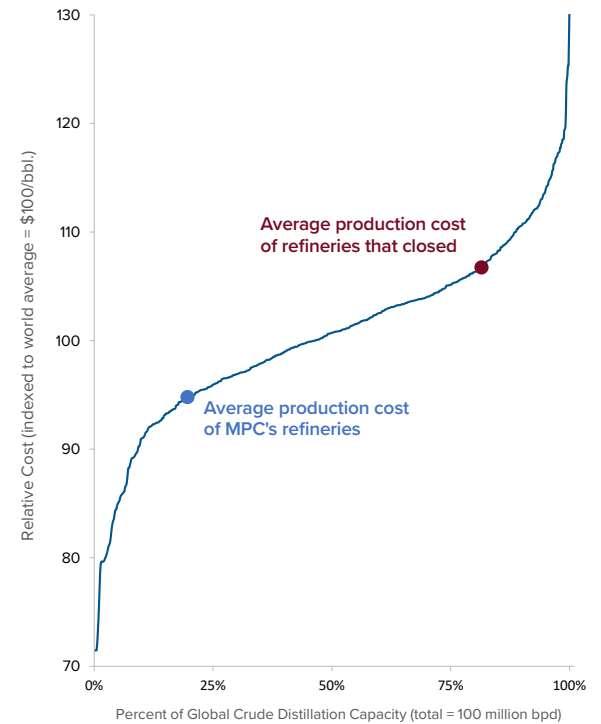
- Average production cost of MPC's refineries
- Average production cost of refineries that closed



**The U.S. refining industry is cost advantaged, and MPC is cost advantaged within the U.S.**

### Simplified Global Refining Cost Curve

(reflects relative cost to produce transportation fuels; does not reflect regional transportation costs etc.)



**MPC's refining fleet is lower cost than ~80% of worldwide capacity.**

Proprietary and Confidential © HSB Solomon Associates LLC

# Climate Scenario Analysis for Midstream

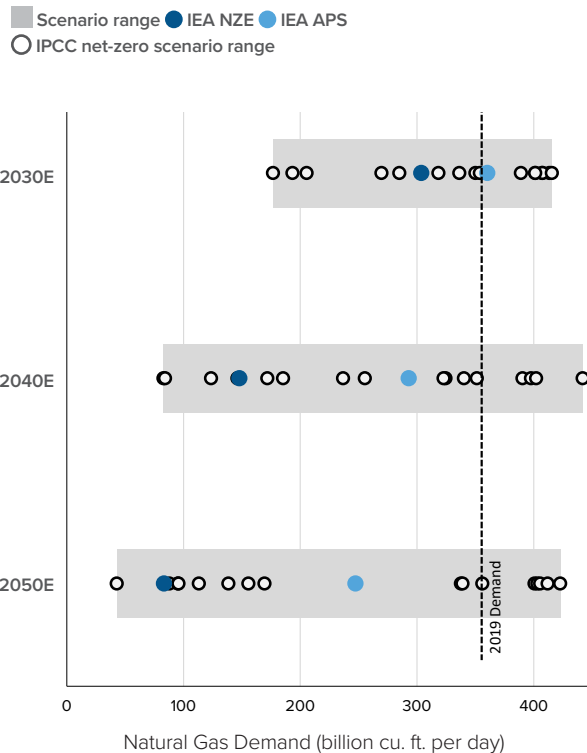
Under many net-zero scenarios, natural gas continues to be an important source of energy through 2050. This is because, as the cleanest burning fossil fuel, natural gas provides a pathway toward significant near-term greenhouse gas emissions reductions and is an option for low-carbon hydrogen production. Natural gas remains the best option for replacing coal in the short term because natural gas produces half the emissions for the same amount of energy as coal, is abundant, burns cleanly and can provide efficient heat on demand. Natural gas power plants can also

be equipped with CCUS technology to further reduce emissions. Natural gas power generation can also be supplemented with renewable power generation, such as wind and solar, with natural gas providing the baseload and peak energy.<sup>1</sup>

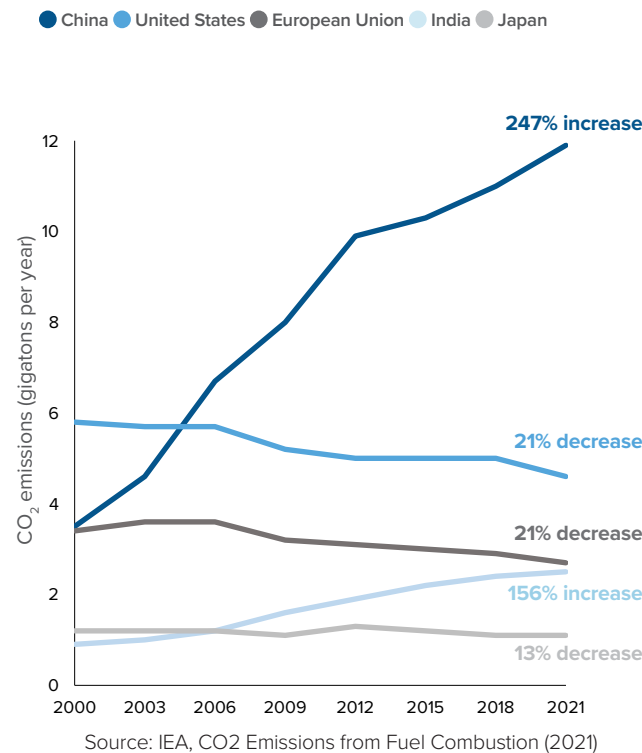
This exact strategy has been successfully implemented in the United States. As shown below, the U.S. reduced CO<sub>2</sub> emissions from fuel combustion by over 1 billion tonnes per year below 2000 levels, a 21% decrease. Much of this reduction occurred

because of coal combustion displacement in favor of natural gas and, to a lesser extent, renewable sources such as wind and solar. This is in stark contrast to China and India, which have experienced a large increase in coal use. For instance, China and India, collectively, still produce nearly two-thirds of their electricity from coal combustion. Both countries continue to build new coal plants, signaling they intend to continue coal use for many years, further reducing the remaining global carbon budget.

**Natural Gas Demand Under Various Scenarios**



**Regional CO<sub>2</sub> Emissions from Fuel Combustion**



**From 2020 to 2022, the United States and European Union retired 65 gigawatts (GW) of coal-fired power plants. These retirements were eclipsed by over 90 GW of net coal-fired power capacity added by China (76 GW), India (8 GW) and Indonesia (6 GW). In addition, another 250 GW of new coal-fired capacity is planned in China over the next several years.**

Global Energy Monitor, Global Coal Plant Tracker (April 2023)

<sup>1</sup> Because both energy demand and the ability to produce wind and solar energy differ significantly by region, each region has an optimal ratio of gas and renewables that would assure grid reliability at the most affordable cost. For simplicity, we have assumed that coal will be displaced with 50% gas and 50% renewables as a basis for potential emissions reductions.

# Natural Gas is a Proven Emissions Reduction Model

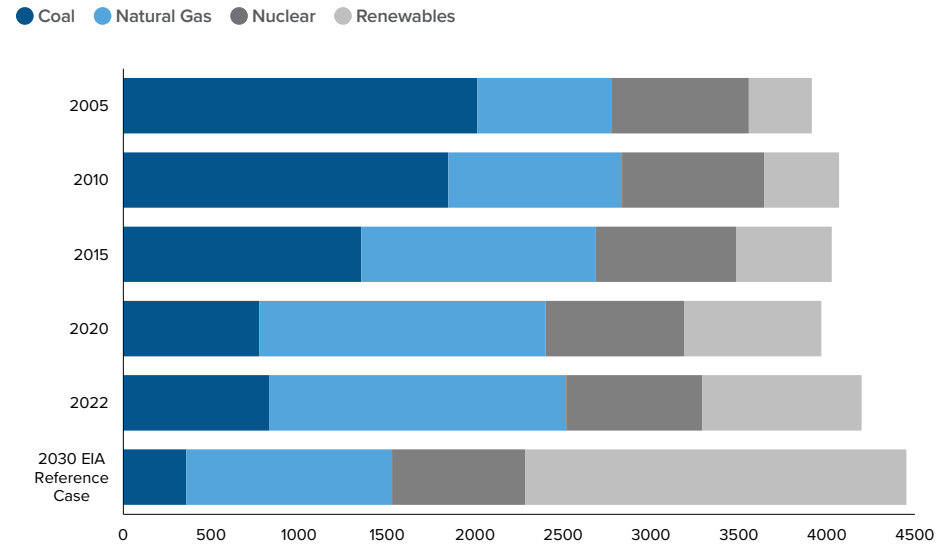
The United States leads all countries, including the European Union, in emissions reductions since 2005. The switch from generating electricity from coal to natural gas is the leading contributor to United States reductions in CO<sub>2</sub> emissions of more than 1 billion tonnes per year since 2005. Over this period, natural gas demand increased by over 45%, equivalent to approximately 28 billion standard cubic feet per day (scfd). This was accomplished through significant private investment across all key segments of the natural gas system, including production, gathering and processing, distribution and storage, and transmission. This coal-to-natural-gas strategy maintained a stable electric grid, kept prices affordable and facilitated a significant increase in renewable power without disrupting electricity supplies. This is a proven model that can and should be replicated throughout much of the world to reduce near-term GHG emissions.

Unfortunately, many governments around the world are increasingly implementing policies that hinder natural gas production in favor of “renewables-only” strategies. Narrow renewables-only net-zero strategies ignore the many technology, intermittency, supply chain and cost barriers that must be addressed to reach extremely high levels of renewable power. These renewables-only policies have impacted energy markets with volatile short-term price spikes, making coal an attractive cheap alternative to quickly bring down energy prices when political pressure increases. For example, when natural gas prices spiked after the Russian invasion of Ukraine, this prompted European nations to use coal in lieu of natural gas, increasing global CO<sub>2</sub> emissions by around 250 million tonnes.<sup>1</sup> Had these nations not scaled back investments in domestic oil and gas production, coal would likely not have been needed.

A more troubling trend is occurring in China, India and Indonesia. These three nations are accelerating the building of new coal generation capacity, collectively adding over 90 GW of net coal-fired capacity in just the last three years. China has another 350 GW of coal-fired capacity already planned.<sup>3</sup> This trend could be reversed if the world embraced the benefits of natural gas as a transition fuel instead of obstructing expanded use. If the United States and other areas of the world leveraged the full potential of natural gas, including supplying liquified natural gas (LNG) to China and India, billions of tonnes of additional near-term CO<sub>2</sub> reductions could be realized worldwide. We believe such a strategy would preserve the carbon budget while facilitating investment in renewables, and the research and development of the next generation of low-carbon energy technologies.

**U.S. Power Generation by Source<sup>2</sup>**

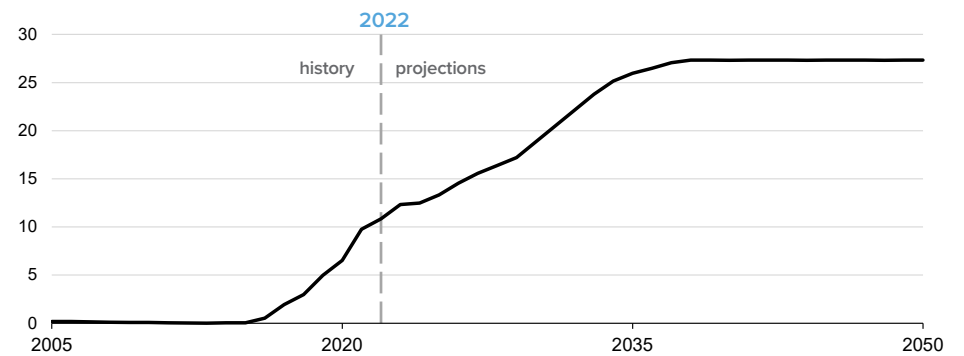
(billion kWh)



Source: U.S. Energy Information Administration

**U.S. Liquefied Natural Gas Net Exports**

(billion cubic feet per day)



Source: U.S. Energy Information Administration (AEO2023)

<sup>1</sup> IEA, Global Energy Review: CO<sub>2</sub> Emissions in 2021, available at <https://www.iea.org/reports/global-energy-review-co2-emissions-in-2021-2>

<sup>2</sup> Petroleum and other fuels are not shown in graph as these make up less than 1% of the total generation.

<sup>3</sup> Global Energy Monitor, Global Coal Plant Tracker (April 2023)

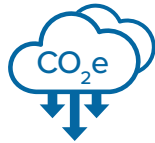
# Natural Gas Can Deliver Additional Carbon Reductions

Natural gas is a versatile, clean-burning and efficient fuel that can be used in a wide variety of applications to deliver emissions reductions beyond coal-to-natural gas switching.



## Natural gas and combined heat and power (CHP)

Replacing lower-efficiency boilers and deploying CHP systems reduce the emissions intensity of the industrial sector, even as natural gas continues to grow as a proportion of total fuel consumption in the sector. MPC operates several CHP systems at our refineries, which have avoided millions of tonnes of GHGs when compared to separately generating electricity and steam.



## Natural gas power generation with CCUS

Natural gas power plants can be retrofitted for carbon capture, utilization and sequestration (CCUS), leading to further GHG reductions. Natural gas generation will be critical to providing grid stability as electrification strategies for buildings, industry and transportation increase electricity demand.



## Natural gas as feedstock

Natural gas and NGLs are important feedstocks to make products such as chemicals and plastics, which do not emit greenhouse gases in end-use. Methane is also the primary feedstock used to produce hydrogen. The proliferation of blue hydrogen made through steam methane reformation with CCUS or methane pyrolysis is a future low-carbon use for natural gas that is expected to drive substantial CO<sub>2</sub> reductions.



## Natural gas as transportation fuel

Compressed natural gas (CNG) and LNG can be deployed directly as a transportation fuel. Most natural gas-fueled vehicles in the United States today are buses and trucks. CNG and LNG can reduce GHG emissions as compared to gasoline and diesel and are energy-dense fuels that can be used in heavy-duty engines and cargo ships where electrification is currently not viable. Limited availability of fueling infrastructure is one of the hurdles to deploying more natural gas-fueled vehicles.

# MPLX's Participation in U.S. GHG Reductions

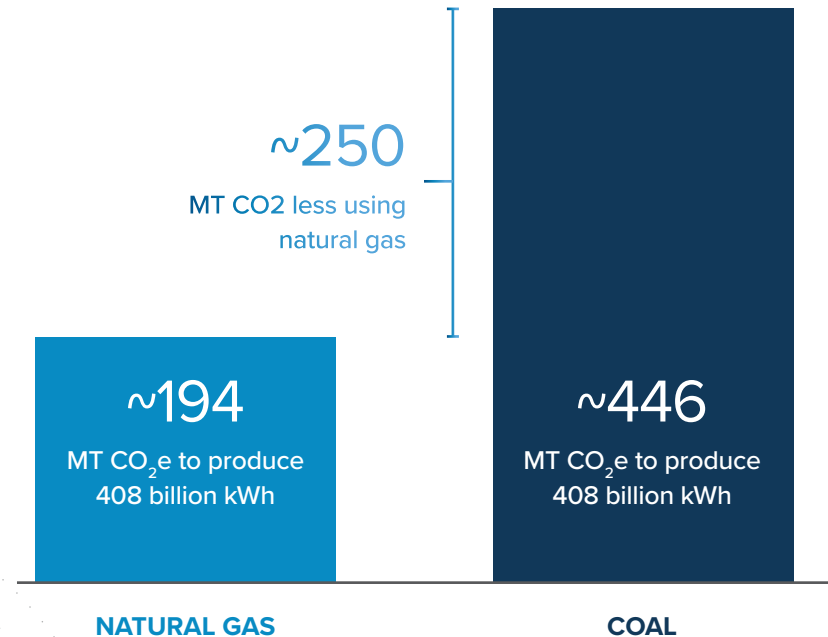
Since 2015, we have invested over \$20 billion to acquire and expand natural gas gathering and processing capacity through our master limited partnership, MPLX. Since first acquiring natural gas assets in December 2015, we have steadily grown MPLX into one of the largest natural gas processing companies in the U.S. These investments facilitated the build-out of infrastructure in the Marcellus, Utica and Permian basins, among others, and helped to significantly reduce the carbon intensity of the U.S. energy supply chain. This infrastructure build-out corresponds with the increase in natural gas electricity generation shown on Page 22. During this period, electricity demand remained relatively flat, but carbon intensity fell dramatically.

Evaluating the gross emissions facilitated by these investments shows that MPLX's scope 1 and 2 GHG emissions grew year over year as gathering and processing infrastructure build-out progressed. However, when emissions that were avoided from coal-to-gas switching are considered as a net societal benefit, MPLX helped to facilitate a net GHG reduction of nearly 250 million tonnes per year as shown to the right.

A full conversion of the remaining U.S. coal power plant fleet to natural gas could result in an additional 540 million metric tonne reduction in CO<sub>2</sub> emissions per year. This is achievable today without use of unproven technology or complete transformation of the energy supply chain. Worldwide, if natural gas were embraced, the world could quickly achieve billions of tonnes of additional CO<sub>2</sub> reductions per year, and more if CCUS is deployed. This is needed to reverse the current trend of increased coal use as natural gas prices have increased.

For climate-related risk reporting to be meaningful, comparisons like these must be considered in the analysis. Otherwise, substantial societal emissions reductions will not be recognized.

MPLX processed ~8.4 billion cubic feet per day of natural gas in 2022, which could produce ~408 billion kWh of electricity.



The annual volume of natural gas processed by MPLX has helped avoid nearly 250 million tonnes of CO<sub>2</sub>e from the U.S. energy supply chain per year when compared to coal for electricity generation.



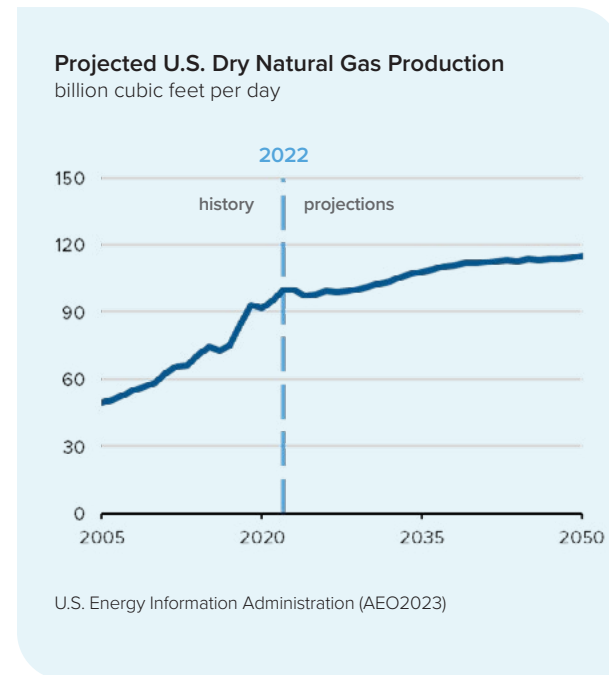
# Midstream Scenario Analysis

Throughout this report we highlight the great potential of U.S. produced natural gas to further the ambitions of the Paris Agreement to reduce GHG emissions. As the cleanest burning fossil fuel, natural gas emits about half the amount of carbon dioxide as coal and is highly versatile.

Natural gas can coexist with intermittent wind and solar generation to deliver electricity with a much lower carbon footprint while providing necessary reliability and affordability. As a transition fuel, it should be utilized to replace coal while the world continues to innovate toward a net-zero world. Not embracing natural gas as the bridge fuel of choice has resulted in increased coal use as energy prices have spiked unnecessarily emitting more CO<sub>2</sub> into the atmosphere than if natural gas was used. Given the significant advantages of natural gas, we expect strong demand for natural gas and NGLs through 2040.

- Natural Gas:** As shown on Page 21, many net-zero scenarios indicate worldwide natural gas demand could remain stable or even increase through 2050 as the world decarbonizes. In addition, the U.S. government is instituting policies to increase exports of U.S. produced natural gas pursuant to President Biden’s executive order on the Task Force to Reduce Europe’s Dependence on Russian Fossil Fuels. One of the main goals of the Task Force is to secure Europe’s energy system by immediately increasing LNG volumes to Europe of at least 15 billion cubic meters (bcm) in 2022 and ramping up U.S. exports by 50 bcm/year of additional U.S. LNG by 2030. This will require an increase in natural gas production, which is expected to be concentrated in the Utica, Marcellus and Permian basins, three of the primary basins where our MPLX G&P networks operate.

- NGLs:** Demand is expected to remain strong through 2040 for the non-methane fractions of natural gas called NGLs, which are important feedstocks for the petrochemical industry (e.g., steam cracking). The IEA projects petrochemical feedstock demand is expected to be higher than today even under the NZE Scenario. The IEA and United Nations also project a significant market increase is needed for clean cooking fuel in the developing world to combat indoor air pollution where people still rely on coal and traditional biomass.
- Midstream Energy Infrastructure and Exports:** The continued strong outlook for U.S. crude, natural gas and NGL production will require additional infrastructure to link supply to global demand markets. Our pipelines, processing and fractionation facilities, terminals and transport vessels are well situated to connect to export facilities. The IEA projects that almost all the growth in U.S. natural gas production will be destined for export.



## Natural Gas - Potential for Low-Carbon Hydrogen Production

Natural gas has the potential to produce blue hydrogen as a zero-carbon fuel and feedstock. In the APS, around 100 billion cubic meters of natural gas equivalent (bcme) of low-carbon hydrogen would be produced globally in 2030, rising to 750 bcme in 2050. Blue hydrogen is produced through a reaction that separates methane into hydrogen and CO<sub>2</sub> and then captures and sequesters the CO<sub>2</sub>. It is lower cost than green hydrogen produced through the electrolysis of water. Much of the 750 bcme of hydrogen production would need to be produced through CCUS-equipped natural gas reformers, unless there are significant advancements in electrolysis and pyrolysis.

	Description	Key Advantages	Key Challenges
<b>SMR with CCUS</b>	Steam methane reforming (SMR) is a thermal process that reacts methane (CH <sub>4</sub> ) with steam to produce hydrogen and CO <sub>2</sub> . In order to be carbon neutral, it needs to be combined with CCUS.	The only technology currently operating at scale. As such, it is the most cost-effective form of hydrogen production, even with the addition of CCUS.	Complex storage of CO <sub>2</sub> gas. Political opposition to CCUS in many countries.
<b>Pyrolysis</b>	Pyrolysis is the decomposition of methane into hydrogen and solid carbon (c). Residual carbon is in solid rather than in gaseous form.	No complex CO <sub>2</sub> storage in underground caverns, as is the case with CCUS. Solid carbon can be used as a feedstock in existing industries.	Early stages of technology development.

# Climate Scenario Analysis of Renewable Fuels

Renewable fuels are derived from biomass and waste feedstocks and include ethanol, biogasoline, sustainable aviation fuel, biodiesel and renewable diesel. Because renewable fuels are sourced from biomass materials (e.g., plants and animal fats) or existing sources of methane (e.g. renewable natural gas), the CO<sub>2</sub> released from combusting these fuels is part of the current carbon cycle and offset by the CO<sub>2</sub> recently removed from the atmosphere. As a result, burning them does not increase overall CO<sub>2</sub> concentrations in the atmosphere.

Renewable fuels are an important tool to reduce the carbon intensity of liquid and gaseous fuels because they can be used in existing engines and infrastructure. As shown to the right, each of the vetted IEA and IPCC net-zero scenarios model significant increases in renewable fuels over the next 30 years. However, renewable fuels can be expensive to produce. For example, many renewable feedstocks are more expensive than finished petroleum-based transportation fuels even before any processing takes place.

As a result, renewable fuels rely heavily on government programs to incentivize production. Examples include the U.S. Renewable Fuel Standard (RFS), California Low Carbon Fuel Standard (LCFS) and various blending mandates throughout the world. Without the market mandates and subsidies, production would not be economical as compared to the cost of traditional transportation fuels.

Although most renewable fuels today are not currently net-zero fuels, the processes to produce them are becoming more efficient with most liquid renewable fuels today delivering a 50% to 80% reduction in GHGs when compared to the fossil-based fuels. Each renewable fuel has a unique carbon intensity because it takes energy (often derived from fossil fuels) to turn biomass material into fuel and deliver it to the consumer.

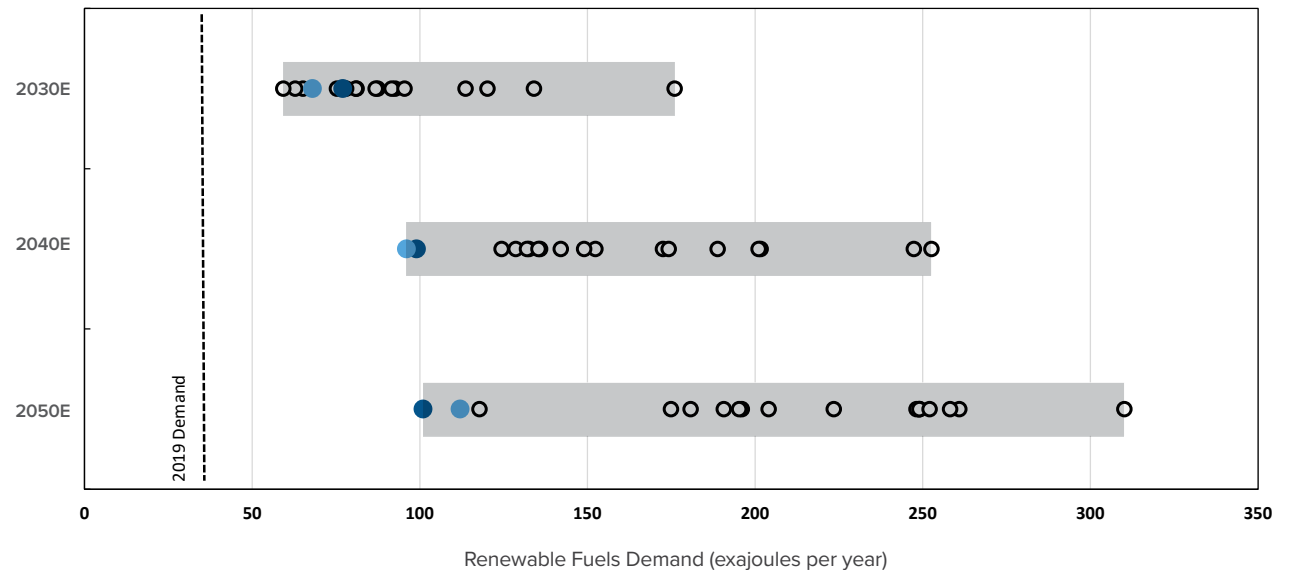
For example, soy-based renewable diesel requires energy to plant and harvest soybeans, transport and process the soybeans into meal and oil, refine the oil into fuel, and transport and deliver the final product to consumers. The carbon emissions associated with each point in the value chain are added together to determine the carbon intensity (CI) of the fuel. Carbon reductions anywhere along the value chain, such as changes in farming practices, more efficient refining or incorporating renewable energy, will result in a lower CI value for the fuel. Some renewable fuels, like renewable natural gas collected from dairy farms, can even have a net-negative CI.



Our Martinez Renewable Fuels facility.

## Renewable Fuels Demand

■ Scenario range ● IEA NZE ● IEA APS ○ IPCC scenario range



# MPC's Renewable Fuels Program

MPC has a robust renewable fuels portfolio that delivered approximately 2.4 billion gallons of renewable fuels to customers in 2022, making us one of the largest marketers of renewable fuels in the U.S. One of our goals is to continually lower the carbon intensity of the products we offer to our customers, and this volume of renewable fuel avoids nearly 10 million tonnes of CO<sub>2</sub> transportation emissions per year.

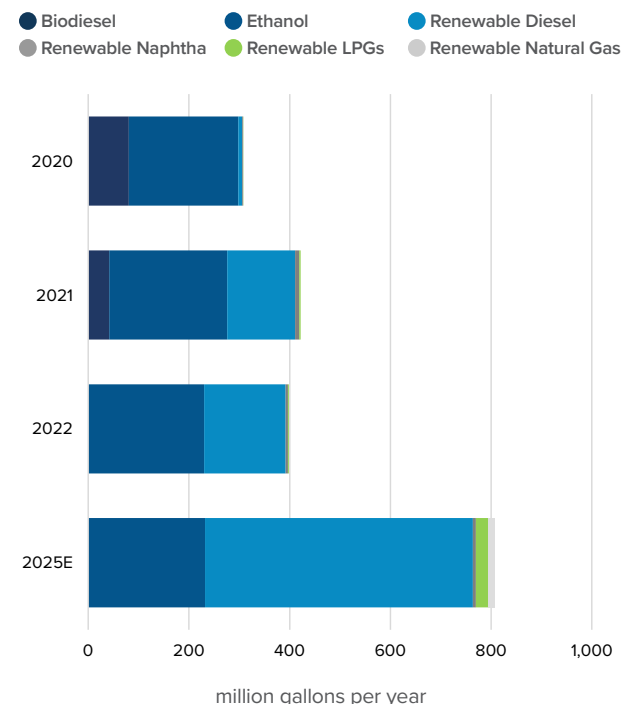
We have a long history of producing and blending ethanol into motor gasoline. Our joint venture with The Andersons produced nearly 460 million gallons of ethanol in 2022, and, in total, we blended ~2 billion gallons into the gasoline we sold to consumers.

Over the past four years, we have invested over \$1 billion to convert two of our petroleum refineries to produce renewable diesel. In 2020, we completed the conversion of our Dickinson, North Dakota refinery producing nearly 170 million gallons of renewable diesel in 2022. We also formed a 50/50 joint venture with Neste in 2022 to complete the conversion of our Martinez, California refinery and began producing renewable diesel in the first quarter of 2023. By the end of 2023, the joint venture expects to reach full capacity, with the ability to produce 730 million gallons of renewable diesel in 2024.

We recently expanded our renewable fuels portfolio, forming a joint venture with LF Bioenergy to produce renewable natural gas (RNG) from dairy operations. The joint venture is focused on developing and growing a portfolio of dairy-based, low carbon-intensity RNG projects. The first plant, located in upstate New York, started operating in the first half of 2023, and we are expecting to expand the portfolio to produce over 6.5 billion Btu per day of RNG by the end of 2026. Dairy-based RNG has a negative carbon intensity because it captures methane that is currently entering the atmosphere for use as fuel. Dairy-based RNG has a carbon intensity typically in the negative 200 to negative 400 grams of CO<sub>2</sub> per megajoule range, as compared to natural gas with a carbon intensity of approximately 80 grams of CO<sub>2</sub> per megajoule.<sup>1</sup>

We continue to evaluate a broad portfolio of options to further expand our renewable fuels portfolio where MPC brings value through our expertise, and we believe our capital investment will result in positive returns.

**MPC Renewable Fuels Production Outlook**  
(Equity share)



**THE ANDERSONS MARATHON HOLDINGS LLC**  
**460 million** gallons of ethanol produced in 2022



**DICKINSON RENEWABLE FUELS**  
**168 million** gallons of renewable diesel produced in 2022



**MARTINEZ RENEWABLE FUELS**  
Commenced operation in 2023. **730 million** gallons of renewable diesel expected in 2024



**LF BIOENERGY**  
Projecting **6.5 billion** Btu per day of negative CI carbon intensity RNG by 2026



**BIOFUELS BLENDING**  
**~2 billion** gallons of ethanol and biodiesel blended into motor fuel in 2022

<sup>1</sup>California Air Resources Board, Current Fuel Pathways spreadsheet, available at <https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>

# Virent

**Virent, Inc., a wholly owned research and development (R&D) subsidiary of MPC, is developing low carbon intensity plant-based fuels and chemicals with estimated expenditures of ~\$20 million per year.**

At its R&D facility and demonstration plant in Madison, Wisconsin, Virent, a wholly owned subsidiary of MPC, has produced tens of thousands of gallons of BioForm® fuels and chemicals that have been used in successful applications. Virent's BioForming® S2A technology converts widely available, plant-based sugars into low-carbon renewable fuels and chemicals that are almost identical to those derived from petroleum. That makes them “drop-in” replacements for their petroleum-based counterparts. In other words, Virent's biobased fuels can be used without requiring any modifications to today's engines or infrastructure and its chemicals can be direct replacements for the same compounds derived from petroleum. The company is also working with Johnson Matthey, a multinational chemicals and sustainable technologies company, to license the BioForming® S2A technology.

The United Airlines test flight using Virent's SAK formulation was featured on ABC's "Good Morning America" on Dec. 2, 2021. The broadcast is available at <https://www.goodmorningamerica.com/news/video/planes-powered-sugar-water-corn-future-travel-81513721> (last visited July 28, 2023).

## **Sustainable Aviation Fuels**

Virent's BioForming® S2A technology creates synthesized aromatic kerosene (SAK), a critical component that enables 100% drop-in sustainable aviation fuel (SAF) and results in a greater than 50% reduction in particulate matter emissions compared to conventional jet fuel. BioForming® SAK can be used both as an SAF blending component in conventional jet fuel or combined with other SAF to provide a 100% drop-in SAF alternative.



**Virent's BioForm® SAK is making aviation history as a component of 100% SAF used in test flights by United Airlines, Emirates, Rolls Royce and Gulfstream, and Bell Helicopter.**

## **Renewable Chemicals**

Virent's BioForming® S2A technology produces bio-paraxylene (BioForm PX®), a key raw material for renewable polyester fibers and packaging. Production of this 100% biobased chemical has a much lower carbon intensity compared to petroleum-based chemicals and is compatible with existing supply chains and recycling infrastructure.



**Virent's BioForm PX® is being used by Toray Industries to create 100% biobased textiles.**

## **Renewable Gasoline**

Virent's BioForming® S2A technology makes gasoline that has the potential to achieve a lower carbon footprint for the gasoline market. Life cycle analysis studies indicate a greater than 50% carbon intensity reduction, with options to achieve net zero or better. When used in a hybrid vehicle, BioForm® gasoline can provide a carbon intensity comparable to electric vehicles.



**Virent's renewable gasoline fuel has been used by the Scuderia Ferrari race team.**

# Carbon Capture, Utilization and Sequestration (CCUS)

MPC and MPLX support the continued development and use of CCUS technology as a strategy to reduce emissions of CO<sub>2</sub> and the carbon intensity of the critical products we supply.

## CCUS Alliances

The IPCC and IEA agree that CCUS has a critical role in achieving global greenhouse gas reduction goals.

Additionally, CCUS is one of the best options to enable “hard-to-abate” sectors – such as refining, steel and cement – to decarbonize.<sup>1</sup>

CCUS technology has been used in limited applications for decades. To further the goal of large-scale CCUS deployment, alliances of private companies, federal, state and local governments, policy institutions, academia, national laboratories, and others are bringing their resources and expertise to bear. These alliances are a way for key stakeholders to leverage each region’s resources and advantages to help make progress toward reducing GHG emissions.

MPC and MPLX are actively involved in three publicly announced alliances – Leading in Gulf Coast Hydrogen Transition (LIGH<sub>2</sub>T) Hub, Appalachian Regional Clean Hydrogen Hub (ARCH2) and a North Dakota regional hub. At present, LIGH<sub>2</sub>T is the largest alliance, with 14 companies evaluating how to use safe, proven CCUS technology at Houston-area facilities.

In addition to CCUS, these regional hubs are also exploring hydrogen energy production and utilization. The hydrogen energy work of these alliances and other coalitions is a direct response to the 2021 Infrastructure Investment and Jobs Act, which provides for initial financial support to several regional hydrogen hubs.

**The primary benefit of our work with carbon capture, utilization and sequestration alliances will be accelerating broad-based efforts to reduce GHG emissions.**

### Near-term Efforts

- Increase the understanding and importance of CCUS
- Progress enabling legislation and regulations that are foundational for the development of large-scale CCUS projects



**~481,000**  
tonnes of CO<sub>2</sub>

captured from MPC and MPLX operations and joint ventures in 2022 for use in



**industrial applications**



**food and beverage industry**

### Tonnes CO<sub>2</sub> captured

#### CCUS SITE

Los Angeles, California, refinery	~ 153,000
Albion, Michigan, ethanol plant	~ 103,000
Greenville, Ohio, ethanol plant	~ 98,000
Denison, Iowa, ethanol plant	~ 84,000
Catcher Ranch, Oklahoma, gas plant	~ 43,000
<b>Total CO<sub>2</sub> captured</b>	<b>~ 481,000</b>

<sup>1</sup> Intergovernmental Panel on Climate Change, Special Report: Global Warming of 1.5°C – Strengthening and implementing the global response (April 2022), <https://www.ipcc.ch/sr15/>; International Energy Agency, Special Report on Carbon Capture Utilization and Storage – CCUS in clean energy transitions (September 2020), available at IEA website.

# Managing Physical Risks to Our Facilities

Our facilities are subject to acute physical risks, such as floods, hurricane-force winds, wildfires and winter storms, and chronic physical risks, such as sea-level rise or water shortages. For example, in 2022, our Tampa, Florida, terminal was affected by Hurricane Ian. The occurrence of these and similar events have had, and may in the future have, an adverse effect on our assets and operations. We have incurred and will continue to incur additional costs to protect our assets and operations from such physical risks and employ the evolving technologies and processes available to mitigate such risks. To the extent such severe weather events or other climate conditions increase in frequency and/or severity, we may be required to modify operations and incur costs that could affect our business.

## Managing Acute Physical Risks

### Extreme Weather Events – Hurricanes and Tropical Storms

Hurricanes and tropical storms pose potential risks to our Gulf Coast assets through excessive winds, storm surge and/or flooding. Efforts to mitigate these weather-related risks include measures to protect against flooding, hardening infrastructure to protect against wind damage and electrical upgrades to ensure power supply continuity.

#### External flood and storm surge controls

Our two Gulf Coast refineries and associated logistics assets are protected from storm surge and flooding through external levee and pump station systems. Our Galveston Bay refinery is protected by an external levee and pump station system that protects 36 square miles of land in the Texas City area. This levee, ranging in height from 19 to 23 feet,

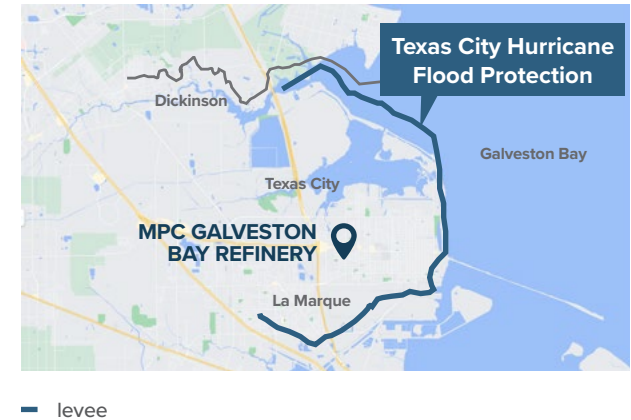
has provided adequate protection through several storms, including Hurricane Ike in 2008, which was accompanied by an unprecedented Category 4 storm surge, and Hurricane Harvey in 2017, which was accompanied by record rainfall and regionwide flooding. Neither of these major storms caused any material flooding to our Galveston Bay operations.

In fact, our Galveston Bay refinery continued to operate throughout Hurricane Harvey, albeit at reduced rates due to interruptions at the ports and pipelines that supply crude to the refinery and transport finished products from the refinery. We were able to quickly increase throughput as ports and pipelines reopened since we did not shut down.

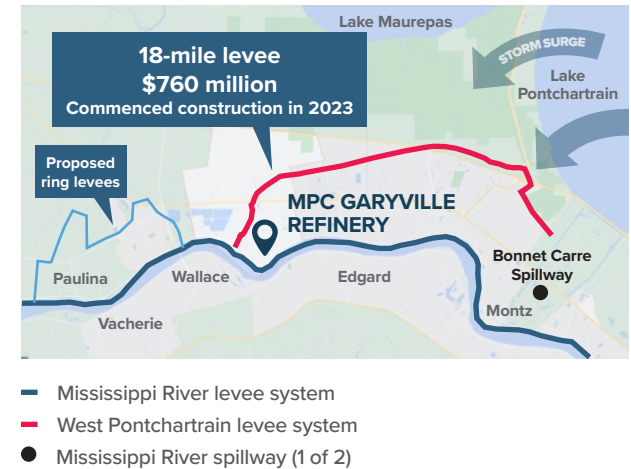
Our Garyville refinery is positioned on a local high point and currently protected by an external levee system that runs along the Mississippi River with several spillways both upstream and downstream of our facility. This system has adequately protected the refinery from significant flooding, including during severe hurricanes like Katrina in 2005, Gustav in 2008 and Ida in 2021. In addition, an 18-mile levee system called the West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction System is currently being constructed by the Pontchartrain Levee District with federal and local funding to protect areas around the refinery from a storm surge in Lake Pontchartrain.

Beyond these external barriers, MPC has implemented additional safeguards within our Gulf Coast operational areas, including locating most pumps and compressors on foundations above grade and adopting hurricane preparedness measures that are implemented well before a storm can impact operations.

### Texas City Hurricane Flood Protection



### Levee Systems Protecting Garyville Refinery



## Managing Acute Physical Risks (continued)

### Facility hardening and other measures

Wind and/or water damage to our control systems or electrical motors could lead to significant repair costs or downtime to our Gulf Coast operating sites. In recent years, new centralized control rooms were built at our Garyville and Galveston Bay refineries to withstand wind and storm surges characteristic of the most extreme weather in their respective locations:

- Galveston Bay's centralized control room is built to withstand winds from a Category 5 hurricane and located approximately 20 feet above grade.
- Garyville's centralized control room is built to withstand a Category 3 hurricane and located five feet above grade. This design represented worst-case conditions at the refinery based upon thousands of simulated hurricane scenarios making landfall along the Louisiana coast.

These hardening measures are designed to protect the main control systems at our two Gulf Coast refineries so they may remain in good operational standing during extreme weather events. Beyond our control rooms, we also designed process vessels, storage tanks and other logistical assets to withstand significant winds so they typically experience little to no damage even in the most significant hurricanes. On occasion, we have experienced some wind damage to insulation and cooling towers; however, this damage is repairable and has not hindered the restart or operation of our assets.

### Electrical infrastructure and power supply

We continue to proactively implement a multiyear program to replace and upgrade electrical infrastructure at our refineries. Improvements include, but are not limited to, cable replacement, high-resistance ground installations, combining substations, installing new safety features and elevating infrastructure to avoid flooding. Our

refineries on the U.S. Gulf Coast each have redundant power supplies and historically have experienced few problems maintaining power during severe weather events, including hurricanes. Our other facilities – such as fuel terminals and pipeline stations – historically exposed to hurricanes or other severe weather elevate power infrastructure above historic flood levels and maintain a combination of on-site generators and contracts for rapid procurement of generators in the event of power loss. Notably, in 2017, all our operations in the greater Houston area maintained power throughout Hurricane Harvey and its aftermath.

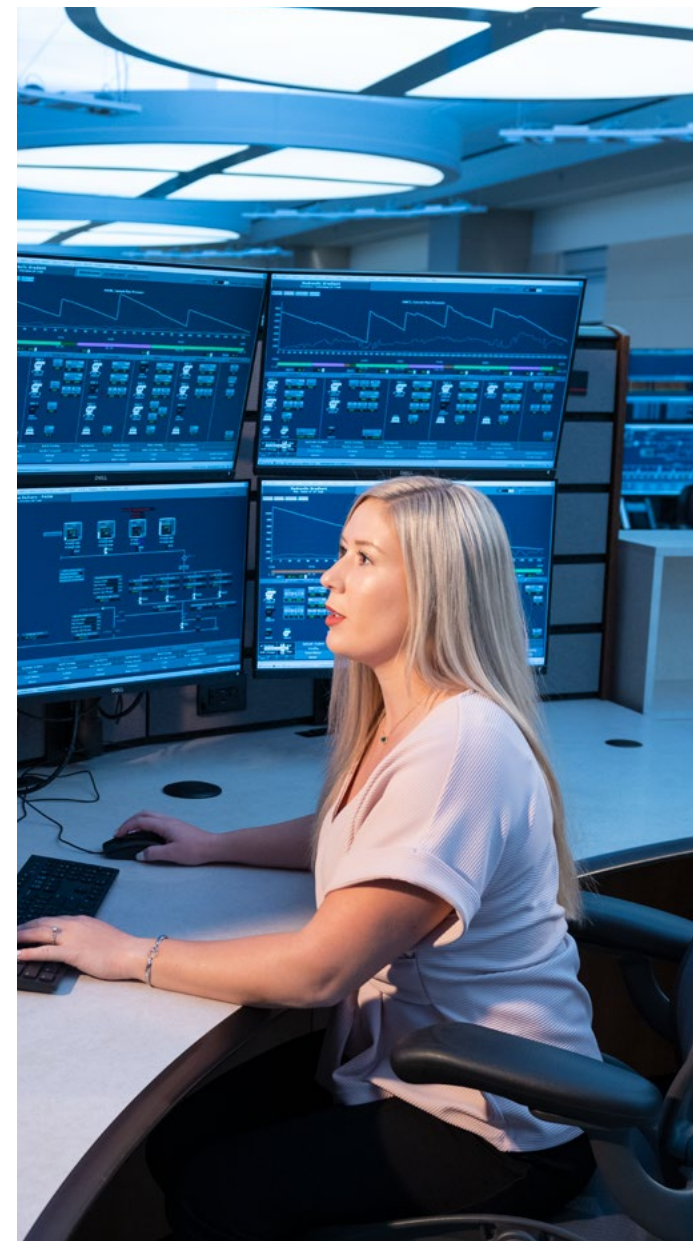
### *Extreme Weather Events – Winter Storms and Heavy Rainfall*

#### Winterization

Refineries in regions that experience freezing and extreme winter weather have implemented winterization plans that identify both short- and long-term actions to ensure the refinery is prepared for winter every year. The plans describe the steps each year that the refinery needs to implement to prepare for inclement weather along with long-term projects to winter-proof equipment.

#### Pipeline integrity management

Our midstream segment owns, leases or has an ownership interest in approximately 19,000 miles of pipelines throughout the United States. We continuously monitor and manage the integrity of our pipeline systems based on changing conditions. One of the programs is monitoring stream crossings using a powerful combination of physical inspections and predictive modeling. By doing so, we identify and proactively relocate pipeline segments deeper below waterway beds to reduce risk of future scouring if flow conditions change due to increased rainfall or increased development.



Our pipeline operations center in Findlay, Ohio.

## Managing Acute Physical Risks (continued)

### *Emergency preparedness and response*

Beyond maintaining our physical assets, we also prepare and train personnel to respond in the event of an emergency such as a major flood, fire or hurricane. We have a dedicated Emergency Management Group that coordinates preparedness and response activities throughout the company so that we can respond rapidly and appropriately to an emergency incident.

We train personnel in the Incident Command System, a globally recognized organizational structure designed to integrate resources across multiple agencies and organizations when an emergency event occurs. To maintain readiness, we conduct training sessions that include tabletop exercises with a review of our emergency plans and resources. We also conduct periodic training simulations that involve federal organizations, such as the U.S. EPA or the U.S. Coast Guard, state environmental protection or wildlife agencies and local emergency responders, such as fire departments and law enforcement.

Our robust programs and procedures allow us to safely maintain our operations throughout severe weather incidents and quickly recover. We have standing agreements in place for alternate workspaces, necessary office equipment and multiple means to maintain internet and telephone connectivity, even during prolonged power outages. We also have agreements for supplies such as generators, repair materials, water and more. We maintain an emergency mass notification system to communicate with personnel before, during and after an emergency. This information is vital to providing humanitarian aid to our personnel, contractors and local communities.

Our Business Recovery Team (BRT) responds during emergency situations to maintain transportation fuel supplies to affected areas. The BRT coordinates supply and transportation methods throughout our operational areas. The team's efforts help ensure fuel supplies reach affected areas, facilitating recovery efforts and enabling daily life and normal operations to resume as quickly as possible.



Corporate Emergency Response Team members participate in a drill during April 2023.



# Managing Chronic Physical Risks

## Sea-Level Rise

In 2019, the IPCC published the Special Report on the Ocean and Cryosphere in a Changing Climate, which included potential sea-level rise in various representative concentration pathway (RCP) scenarios. The high emissions scenario, RCP 8.5, had the highest sea-level rise, with a median value of 0.84 meters (2.76 feet) and likely range of 0.61 to 1.1 meters (2.00 to 3.61 feet).

MPC operates five coastal petroleum refineries located in Anacortes, Washington; Garyville, Louisiana; Texas City, Texas (Galveston Bay); Los Angeles, California; and Kenai, Alaska. We also have one coastal renewable fuels facility in Martinez, California, and 18 coastal terminals located in Alaska, California, Florida, Louisiana, Texas and Washington. The National Oceanic and Atmospheric Administration's sea-level rise viewer can be used to screen for potential flooding levels due to sea-level rise. At 4 feet of sea-level rise, which is above the high end of the likely range in the high emissions scenario, flooding was not indicated at our Anacortes, Garyville, Galveston Bay and Los Angeles refineries or the majority of our terminals. The tool did identify a low level of flooding at the northern end of the Martinez facility at Avon Wharf. However, a project was completed in 2017 to upgrade the Avon Marine Terminal to the latest Marine Oil Terminal Engineering & Maintenance Standards that considered potential sea-level rise in its design. As part of the permit for the project, a technical memorandum estimating future water levels at the Avon terminal (Simpson, Gumpertz & Heger Inc., 2021) was prepared.<sup>1</sup> The assessment determined that 2030 water levels would increase by approximately 2.7 inches (0.221 feet), resulting from an extreme tide or 100-year flood conditions and that the Avon terminal pipeway infrastructure would not be inundated. The assessment further concluded that, assuming a measured water level rise of approximately 0.1 inch per year, the pipelines would not likely be inundated until 2070, which provides adequate time to monitor and mitigate any potential impacts.

Several of our terminals showed minor impacts above 3 feet of sea-level rise which is at the high end of the likely range in the high emissions scenario. However, because of the chronic nature of sea-level rise, we believe there is adequate time to monitor and mitigate any potential impacts to these assets.

While we can use different scenarios and tools to screen for potential risks, the actual acute and chronic physical risks faced by our facilities in the future are not certain. As such, we have developed mature systems to effectively manage these risks through our ERM process.

NOAA modeling tool indicating the Anacortes refinery is not expected to experience flooding at 4 feet of sea-level rise.



Source: <https://coast.noaa.gov/slr/>

<sup>1</sup> Contra Costa County, Martinez Renewable Fuels Project, Environmental Impact Report, p. 6-9 (October 2021), available at <https://www.contracosta.ca.gov/DocumentCenter/View/72957/Martinez-Refinery-Renewable-Fuels-DEIR-Vol-1-Complete-DEIR>

# Managing Chronic Physical Risks (continued)

## Water availability and drought

Fresh water is essential to sustaining life. Our society relies on water for food, health, livelihoods and recreation. Water is also vital to our operations. It is used to add heat to our refining process (as steam), remove heat from the process (as cooling water), remove impurities from crude oil, protect equipment from corrosion, control emissions and clean equipment during maintenance activities.

Water availability and other water risks such as water quality are a major concern throughout much of the world, including parts of the U.S. Population growth, together with a changing climate, could further exacerbate these water risks. As shown below, our Los Angeles refinery and Martinez Renewable Fuels facility are located in areas designated as high for

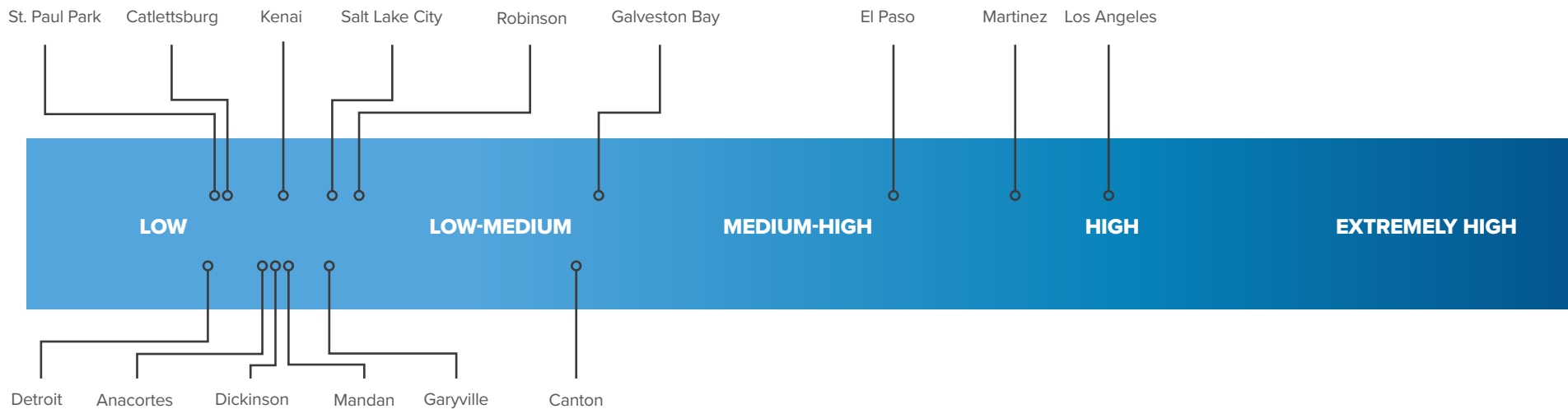
water risk as defined by the Global Reporting Initiative and World Resources Institute assessment tools.

To manage risk surrounding water use, in 2020, we adopted a formal Focus on Water program, which is designed to assess site water use and understand and mitigate water risks. To further the program's success, we also established a companywide target to reduce freshwater withdrawal intensity by 20% below 2016 levels by 2030. To date, we have achieved a 17% reduction in intensity below 2016 levels, which equates to over 3.5 billion gallons of freshwater saved per year. Projects identified by the Focus on Water program have the potential to save an additional 500 million gallons of freshwater per year.

## FACILITY DESIGN

**Our MPLX gas processing plants are designed to use little to no water in their routine operations. Instead of using steam for heating and water for cooling, nearly all our gas processing facilities use hot oil heaters that transfer heat to the process and air-cooling units (called fin fans) that circulate hot product through air-cooled radiators. These measures eliminate the need for cooling towers and steam boilers that rely on fresh water.**

Water Risk Analysis (Aqueduct Assessment Tool)<sup>1</sup>



<sup>1</sup> World Resource Institute, Aqueduct Assessment Tool, available at <https://www.wri.org/aqueduct/tools>

Greenhouse Gas Metrics <sup>(1)(2)</sup>		Unit of measure	Result 2014	Result 2016	Result 2019	Result 2021	Result 2022
<b>Activity</b>							
1	MPC Refining manufacturing inputs	million boe	1,026	1,075	1,142	1,012	<b>1,068</b>
2	MPLX G&P gas plant manufacturing inputs	million boe	332	513	675	670	<b>673</b>
3	Total MPC and MPLX manufacturing inputs	million boe	1,358	1,588	1,817	1,682	<b>1,741</b>
4	MPLX G&P gas gathering throughput	billion scf	-	1,541	2,178	1,873	<b>2,075</b>
5	MPLX G&P gas processing throughput	billion scf	-	2,366	3,062	3,004	<b>3,022</b>
<b>Scope 1 GHG emissions<sup>(3)(4)</sup></b>							
6	MPC Refining scope 1 GHG emissions	million tonnes CO <sub>2</sub> e	31.4	32.4	31	27.5	<b>28.3</b>
7	MPLX G&P scope 1 GHG emissions	million tonnes CO <sub>2</sub> e	3.3	4.8	5.4	5	<b>5.1</b>
8	MPLX L&S scope 1 GHG emissions	million tonnes CO <sub>2</sub> e	0.3	0.4	0.3	0.5	<b>0.3</b>
9	MPC Other scope 1 GHG emissions	million tonnes CO <sub>2</sub> e	0.04	0.03	0.06	0.03	<b>0.01</b>
10	Total MPC and MPLX scope 1 GHG emissions	million tonnes CO <sub>2</sub> e	35	37.7	36.8	33	<b>33.7</b>
11	Total scope 1 biogenic CO <sub>2</sub> emissions	million tonnes biogenic CO <sub>2</sub>	0	0	0	0.1	<b>0.08</b>
<b>Scope 2 GHG emissions (location-based)<sup>(4)(5)</sup></b>							
12	MPC Refining scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	4.3	4.4	4	3.5	<b>3.4</b>
13	MPLX G&P scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	1.9	2.9	3.2	2.7	<b>2.8</b>
14	MPLX L&S scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	0.6	0.7	0.6	0.6	<b>0.5</b>
15	MPC Other scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	0.4	0.5	0.4	0.1	<b>0.01</b>
16	Total MPC and MPLX scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	7.1	8.5	8.2	6.9	<b>6.7</b>
<b>Scope 2 GHG emissions (market-based)<sup>(4)(5)</sup></b>							
17	MPC Refining scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	4.3	4.4	4	3.5	<b>3.4</b>
18	MPLX G&P scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	1.9	2.9	3.2	2.7	<b>2.8</b>
19	MPLX L&S scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	0.6	0.7	0.6	0.6	<b>0.5</b>
20	MPC Other scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	0.4	0.5	0.4	0.1	<b>0.01</b>
21	Total MPC and MPLX scope 2 GHG emissions	million tonnes CO <sub>2</sub> e	7.1	8.5	8.2	6.9	<b>6.7</b>
<b>Scope 3 GHG emissions<sup>(4)(6)</sup></b>							
22	MPC scope 3 - category 11 GHG emissions (refinery yield method)	million tonnes CO <sub>2</sub> e	-	-	426	379	<b>404</b>
23	Biogenic MPC scope 3 - category 11 GHG emissions (refinery yield method)	million tonnes biogenic CO <sub>2</sub>	-	-	1	2	<b>2</b>
<b>GHG Intensities</b>							
24	MPC Refining scope 1 & 2 GHG intensity <sup>(7)</sup>	tonnes CO <sub>2</sub> e/thousand boe input	33.7	33.1	29.5	29.3	<b>28.4</b>
25	MPLX G&P scope 1 & 2 GHG intensity	tonnes CO <sub>2</sub> e/thousand boe input	15.6	15	12.7	11.5	<b>11.6</b>
26	MPC total scope 1 & 2 GHG intensity <sup>(8)</sup>	tonnes CO <sub>2</sub> e/thousand boe input	29.9	28	23.8	22.9	<b>22.4</b>
27	MPC total scope 1 & 2 GHG intensity <sup>(8)</sup>	reduction from 2014 baseline	-	-6%	-21%	-23%	<b>-25%</b>

Greenhouse Gas Metrics (continued)		Unit of measure	Result 2014	Result 2016	Result 2019	Result 2021	Result 2022
<b>Methane<sup>(1)(2)(9)</sup></b>							
28	MPLX G&P gas gathering methane emissions	thousand tonnes CH <sub>4</sub>	-	24.1	18.4	15.2	<b>14.3</b>
29	MPLX G&P gas processing methane emissions	thousand tonnes CH <sub>4</sub>	-	3.8	7.9	3.5	<b>3.4</b>
30	MPLX G&P total methane emissions	thousand tonnes CH <sub>4</sub>	-	28	26.3	18.7	<b>17.7</b>
31	MPLX G&P gas gathering methane emissions	billion scf CH <sub>4</sub>	-	1.26	0.96	0.79	<b>0.75</b>
32	MPLX G&P gas processing methane emissions	billion scf CH <sub>4</sub>	-	0.2	0.41	0.18	<b>0.18</b>
33	MPLX G&P total methane emissions	billion scf CH <sub>4</sub>	-	1.46	1.37	0.98	<b>0.92</b>
34	MPLX G&P gas gathering methane emissions intensity	methane (scf)/natural gas input (scf)	-	0.082%	0.044%	0.042%	<b>0.036%</b>
35	MPLX G&P gas processing methane emissions intensity	methane (scf)/natural gas input (scf)	-	0.008%	0.013%	0.006%	<b>0.006%</b>
36	MPLX G&P combined methane emissions intensity	methane (scf)/natural gas input (scf)	-	0.037%	0.026%	0.020%	<b>0.018%</b>
<b>Water (MPC and MPLX Combined)<sup>(1)(2)</sup></b>							
37	Total freshwater withdrawal	thousand megaliters	-	148	156	134	<b>134</b>
38	Total water discharge	thousand megaliters	-	83	89	79	<b>79</b>
39	Total freshwater withdrawal in stressed areas	thousand megaliters	-	36	39	30	<b>28</b>
40	Total water discharge in stressed areas	thousand megaliters	-	21	21	16	<b>18</b>
41	Freshwater withdrawal intensity	megaliters/million boe input	-	93	86	80	<b>77</b>
42	Freshwater withdrawal intensity	reduction from 2016 baseline	-	-	-8%	-14%	<b>-17%</b>

(1) Data before 2019 is inclusive of facilities that MPC did not yet own so that performance can be compared across the same asset base over time.

(2) GHG methane, and water data reported for facilities over which MPC and MPLX has operational control.

(3) Scope 1 direct GHG emissions include those from Refining, Midstream and Retail/other and are typically calculated per the EPA's Mandatory Greenhouse Gas Reporting Program or the 2009 API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. Global Warming Potentials used are from Table A-1 to Subpart A of 40 CFR Part 98 as of the year they were reported. It includes emissions from fuel combustion, company vehicles and fugitive emissions.

(4) Inclusive of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and sulfur hexafluoride (SF<sub>6</sub>). Nitrogen trifluoride (NF<sub>3</sub>), hydrofluorocarbons (HFC), and perfluorocarbons (PFC) emissions are considered to not be significant to our operations and are therefore excluded.

(5) Scope 2 emissions include indirect GHG emissions from consumption of purchased electricity, heat or steam.

(6) MPC estimates emissions from third-party use of sold products in alignment with methods in Category 11 of IpiECA's Estimating Petroleum Industry Value Chain (Scope 3) Greenhouse Gas Emissions (2016). Emissions estimates are based on refinery yields as stated in MPC's Annual Report on Form 10-K, emission factors from EPA's GHG Emission Factors Hub at the EPA Center for Corporate Climate Leadership, and storage factors derived from Table 3-22 and Annex 2 of EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks.

(7) Excludes GHGs associated with exported power from cogeneration units.

(8) Excludes Retail and GHGs associated with exported power from cogeneration units.

(9) Methane emissions were calculated pursuant to the EPA's Mandatory Greenhouse Gas Reporting Rule (MRR) at 40 CFR Part 98. As highlighted on Page 13, through engine testing we have identified higher methane slip emissions from large gas-fired compressor engines than emissions reported using the MRR factors. This is a common finding from the enhanced monitoring efforts within the Midstream Sector. The U.S. EPA has proposed changes to the MRR that include revised methane emission factors from large gas-fired compressors. See U.S. EPA, Proposed Rule: Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems, (Pre-publication version issued June 30, 2023). We expect that our reported methane emissions to entail an increase of ~20,000 metric tons per year in our baseline and annual reported methane emissions beginning next year.

# TCFD Recommendations

The table below shows how the disclosures in this report align with the recommendations of the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD), as the TCFD has described the categories, and where the relevant information can be found in this report.

TCFD Recommendation		Section	Page
<b>Governance</b>			
Disclose the organization’s governance around climate-related risks and opportunities.	Describe the board’s oversight of climate-related risks and opportunities.	Governance: Board of Directors	6
	Describe management’s role in assessing and managing climate-related risks and opportunities.	Governance: MPC Executive Leadership Team	6
<b>Strategy</b>			
Disclose the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy and financial planning where such information is material.	Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.	Business Strategy and Climate-Related Scenario Planning	17-29
	Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy and financial planning.	Planning for the Energy Evolution Business Planning and Capital Allocation	8 9
	Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Business Strategy and Climate-Related Scenario Planning	17-29
<b>Risk Management</b>			
Disclose how the organization identifies, assesses and manages climate-related risks.	Describe the organization’s processes for identifying and assessing climate-related risks.	Governance	6-7 18
	Describe the organization’s processes for managing climate-related risks.	Risk Management Physical Risks	7 30-34
	Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization’s overall risk management.	Risk Management	7
<b>Metrics and Targets</b>			
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Climate-Related Metrics and Targets	10
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Greenhouse Gas Metrics	35-36
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Climate-Related Metrics and Targets	10-16



MPC, NESTE, the California Air Resources Board, the Contra Costa County Board of Supervisors, and the California Energy Commission



## ENERGY STAR® Accomplishments

### U.S. EPA's ENERGY STAR Partner of the Year Sustained Excellence Award

- ★ Sixth consecutive Partner of the Year Award
- ★ Fourth consecutive Partner of the Year Sustained Excellence Award

### Six Refineries ENERGY STAR Certified

- ★ Anacortes, Washington (3 years)
- ★ Canton, Ohio (17 years)
- ★ Detroit, Michigan (7 years)
- ★ Garyville, Louisiana (17 years)
- ★ Robinson, Illinois (8 years)
- ★ St. Paul Park, Minnesota (5 years)

### Facilities Achieving the ENERGY STAR Challenge for Industry (11 Total)

- ★ Champaign, Illinois Terminal
- ★ Charleston, South Carolina Terminal
- ★ Cincinnati, Ohio Terminal
- ★ Cincinnati Renewable Fuels, LLC (2 times)
- ★ Jackson, Michigan Terminal
- ★ Lansing, Michigan Terminal
- ★ Muncie, Indiana Terminal
- ★ Nashville, Tennessee - 51st Terminal
- ★ Nashville, Tennessee - Bordeaux Terminal
- ★ Nashville, Tennessee - Downtown Terminal
- ★ Youngstown, Ohio Terminal



Marathon Petroleum Corporation  
Corporate Headquarters  
539 S. Main St.  
Findlay, Ohio 45840  
[marathonpetroleum.com](http://marathonpetroleum.com)

## Forward-looking Statements

This publication contains forward-looking statements regarding Marathon Petroleum Corporation (MPC) and MPLX LP (MPLX). These forward-looking statements may relate to, among other things, our expectations, estimates and projections concerning its business and operations, financial priorities, strategic plans and initiatives, capital return plans, capital expenditure plans, operating cost reduction objectives, and environmental, social and governance (ESG) plans and goals. Forward-looking and other statements regarding our ESG plans and goals are not an indication that these statements are material to investors or are required to be disclosed in our filings with the Securities Exchange Commission (SEC). In the context of this disclosure, the term “material” is distinct from, and should not be confused with, such term as defined for SEC reporting purposes. You can identify forward-looking statements by words such as “anticipate,” “believe,” “commitment,” “could,” “design,” “estimate,” “expect,” “forecast,” “goal,” “guidance,” “intend,” “may,” “objective,” “opportunity,” “outlook,” “plan,” “policy,” “position,” “potential,” “predict,” “priority,” “project,” “prospective,” “pursue,” “seek,” “should,” “strategy,” “target,” “will,” “would” or other similar expressions that convey the uncertainty of future events or outcomes. Forward-looking statements in this document include those relating to our scope 1 and scope 2 GHG emissions reduction targets, methane emissions reduction targets, freshwater withdrawal intensity reduction targets, scope 3, category 11 GHG emissions reduction targets, expected timing of completion of projects, future market, industry and legislative conditions, future safety performance, DE&I targets and goals, future operating performance and management of future risks. We caution that these statements are based on management’s current knowledge and expectations and are subject to certain risks and uncertainties, many of which are beyond our control, that could cause actual results and events to differ materially from the statements made herein. Factors that could cause actual results to differ materially from those implied in the forward-looking statements include but are not limited to: political or regulatory developments, including changes in governmental policies relating to refined petroleum products, crude oil, natural gas, NGLs, GHG emissions, or renewables, or taxation; the regional, national and worldwide demand for refined products, natural gas and renewables and related margins; the regional, national or worldwide availability and pricing of crude oil, natural gas, NGLs and other feedstocks and related pricing differentials; the success or timing of completion of ongoing or anticipated projects, including meeting the expected production rates for the within the expected timeframes if at all; the timing and ability to obtain necessary regulatory approvals and permits and to satisfy other conditions necessary to complete planned projects or to consummate planned transactions within the expected timeframes if at all; the availability of desirable strategic alternatives to optimize portfolio assets and the ability to obtain regulatory and other approvals with respect thereto; our ability to successfully implement our sustainable energy strategy and principles and achieve our ESG plans and goals within the expected timeframes if at all; the occurrence of industrial accidents; changes in government incentives for emission-reduction products and technologies; the outcome of research and development efforts to create future technologies necessary to achieve our ESG plans and goals; our ability to scale projects and technologies on a commercially competitive basis; actions of competitors; changes in regional and global economic growth rates and consumer preferences, including consumer support for emission-reduction products and technology; our ability to identify and recruit diverse employee candidates; and the factors set forth under the heading “Risk Factors” in MPC’s and MPLX’s Annual Reports on Form 10-K for the year ended Dec. 31, 2022, and in other filings with the SEC. Copies of MPC’s SEC filings are available on the SEC’s website, MPC’s website at <https://www.marathonpetroleum.com/Investors/> or by contacting MPC’s Investor Relations office. Copies of MPLX’s SEC filings are available on the SEC’s website, MPLX’s website at <http://ir.mplx.com> or by contacting MPLX’s Investor Relations office. Any forward-looking statement speaks only as of the date of the applicable communication and we undertake no obligation to update any forward-looking statement except to the extent required by applicable law.

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