# NAIC CLIMATE RISK DISCLOSURE SURVEY
# TCFD-ALIGNED QUESTIONS
# UPDATED 2022

## GOVERNANCE

1. *Disclose the insurer's governance around climate-related risks and opportunities.*

*In disclosing the insurer's governance around climate-related risks and opportunities insurers should consider including the following:*

- Identify and include any publicly stated goals on climate-related risks and opportunities.
- Describe where climate-related disclosure is handled within the insurer's structure, e.g., at a group level, entity level, or a combination. If handled at the group level, describe what activities are undertaken at the company level.

*A. Describe the board and/or committee responsible for the oversight of climate-related risks and opportunities.*

*In describing the position on the board and/or committee responsible for the oversight of managing the climate-related financial risks, insurers should consider including the following:*

- Describe the position on the board and/or committee responsible for the oversight of managing the climate-related financial risks.

*B. Describe management's role in assessing and managing climate-related risks and opportunities.*

As a mutual company, Massachusetts Mutual Life Insurance Company ("MassMutual") operates for the benefit of our members and participating policyowners, which allows us to manage the company with a focus on their long-term interests. This means that our commitment to sustainability is fundamentally aligned with, and ingrained in, how we operate and deliver value to the people who depend on us and the planet we share. Our 2023 Sustainability Report(1) details our progress and reflects our commitment to being transparent about our performance.

Climate change-related risks and opportunities, along with associated disclosures, are handled by MassMutual for the parent company (Massachusetts Mutual Life Insurance Company) and subsidiaries C.M. Life and MassMutual Ascend (2). We are actively integrating climate considerations into the way we do business so that we can continue to serve the long-term interests of our policyowners, customers, employees, and communities.

MassMutual's Board of Directors provides independent oversight of our management and of our overall sustainability strategy, including our climate strategy and our net zero portfolio and operations commitments. The Board also oversees our Enterprise Risk Management (ERM) framework and receives updates on our risk management processes, policies, and guidelines at least annually. Climate risks, including transition and physical risks, are integrated into our ERM framework.

The Board and its committees engage with management, including our Chief Risk Officer, Chief Investment Officer, and Head of Sustainability, on climate-related activities, climate risks and opportunities, and our net zero commitments. The Executive Leadership Team, led by our Chief Executive Officer, is the management-level body responsible for overseeing the development and execution of our sustainability strategy, including climate risks and opportunities, progress toward our net zero commitments, and associated disclosures.

The Enterprise Risk Committee is chaired by our Chief Risk Officer and includes the Executive Leadership Team. The Enterprise Risk Committee's responsibilities include establishing MassMutual's ERM policies and procedures, approving risk appetite and associated tolerance levels, and identifying top and emerging risks. We continue to integrate climate risks into our ERM framework.

Our Global Sustainability Office, led by the Head of Sustainability, is responsible for developing and implementing our climate strategy in collaboration with key business units throughout the company. The Global Sustainability Office leads work on climate risk and opportunities, our net zero commitments, and climate and sustainability disclosures in collaboration with related business groups.

(1) Available at https://www.massmutual.com/global/media/shared/doc/sustainability/2023sustainabilityreport.pdf

(2) Other subsidiaries of MassMutual did not meet the filing threshold.

**GOVERNANCE – CLOSE ENDED QUESTIONS**

- Does the insurer have publicly stated goals on climate-related risks and opportunities? **Yes**
- Does your board have a member, members, a committee, or committees responsible for the oversight of managing the climate-related financial risk? **No**
- Does management have a role in assessing climate-related risks and opportunities? **Yes**
- Does management have a role in managing climate-related risks and opportunities? **Yes**

# STRATEGY

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

*In disclosing the actual and potential impacts of climate-related risks and opportunities on the insurer's businesses, strategy and financial planning, insurers should consider including the following:*

• Describe the steps the insurer has taken to engage key constituencies on the topic of climate risk and resiliency. *

• Describe the insurer's plan to assess, reduce, or mitigate its greenhouse gas emissions in its operations or organizations. *

*A. Describe the climate-related risks and opportunities the insurer has identified over the short, medium, and long term.*

*In describing the climate-related risks and opportunities the insurer has identified over the short, medium, and longer term, insurers should consider including the following:*

• Define short, medium, and long-term, if different than 1-5 years as short term, 5-10 years as medium term, and 10-30 years as long term.

*B. Describe the impact of climate-related risks and opportunities on the insurer's business, strategy, and financial planning.*

*In describing the impact of climate-related risks and opportunities on the insurer's business, strategy, and financial planning, insurers should consider including the following:*

• Discuss if and how the insurer provides products or services to support the transition to a low carbon economy or helps customers adapt to climate-related risk.

• Discuss if and how the insurer makes investments to support the transition to a low carbon economy.

*C. Describe the resilience of the insurer's strategy, taking into consideration different climate-related scenarios, including a 2 degree Celsius or lower scenario.*

MassMutual's climate strategy is twofold: We leverage our capital to support the transition to a low-carbon economy while managing climate risks to succeed in a rapidly changing world. This approach is directly linked to how we deliver long-term value and stability for our policyowners and customers. We are integrating climate considerations into our investment processes, operations, and ERM framework in support of our long-term strategic resilience.

## Net Zero Portfolio by 2050

In 2021, MassMutual announced our commitment to reach net zero emissions in our investment portfolio by 2050. Our General Investment Account (GIA) is our largest impact on the climate and our greatest potential exposure to climate-related risks. It is also our most effective vehicle to capture the significant investment opportunities associated with the transition to a low-carbon economy.

In 2023, we disclosed interim targets for our commercial mortgage loans and public corporate power and energy portfolios. We started with these carbon-intensive sectors because they represent meaningful emissions from our GIA and have credible data, methodologies, and transition pathways. In setting these targets, we considered guidance from available frameworks, including those developed by the Science Based Targets initiative (SBTi) and the Partnership for Carbon Accounting Financials (PCAF). We will continue to evolve our target-setting approach over time based on availability of credible data and target-setting methodologies.

Through a cross-functional collaboration led by the Global Sustainability Office, we established a set of principles to guide the implementation of our 2030 interim net zero targets. These principles affirm our commitment to safeguard our long-term investment performance objectives and deliver attractive risk-adjusted returns. As an asset owner, we engage with asset managers, borrowers, and other stakeholders to leverage our capital and invest in the global energy transition. We recognize the many factors both in and out of our control, including public policy and technological advancements, that may affect our ability to achieve our targets. Lastly, we commit to adopting a transparent and data-driven approach, monitoring and reporting our progress, and recalibrating our targets as needed, based on best practices.

Our ambition to achieve these interim targets and our commitment to achieve net zero portfolio emissions by 2050 is supported by a multiyear roadmap and detailed annual action plans. Our roadmap includes enhancing company-wide capabilities, such as data management tools and learning resources. We are incorporating net zero interim targets and metrics into our standard investment management process, in a way that supports our belief in an engagement-centered approach to encourage decarbonization.

## Investing in the Global Energy Transition

To advance our net zero portfolio commitment, we actively pursue investment opportunities in solutions that support the transition to a low-carbon economy and generate long-term value for our policyowners.

For example, in 2023, MassMutual announced our purchase of a majority interest in Counterpointe Sustainable Advisors LLC, a firm focused on real estate financing products for sustainable buildings and energy efficiency, renewable energy, and resiliency measures in commercial properties. Counterpointe will manage sustainable investment assets and provide solutions-based financing for clean energy projects, helping reduce the carbon footprint of commercial real estate and energy infrastructure across the United States.

This complements our ongoing strategic partnership with Low Carbon Limited, a leading renewable energy company based in the U.K. We began working with Low Carbon in 2021, with the objective of accelerating the renewable energy transition through the creation of 20 gigawatts of new capacity by 2030. In 2023, we announced a £400 million investment increase in Low Carbon Limited, helping to significantly expand the company's capacity by providing funding for its pipeline of projects through 2025. MassMutual Ventures (MMV) launched a $100 million Climate Technology

Fund in 2022 to invest in early- and growth-stage climate technology companies working to address the sources of climate change or provide solutions for managing climate impacts.

MassMutual continues to deploy our capital to develop low- and zero-carbon energy, as part of our sustainable investing strategy. In 2023, we invested $88 million in renewable energy, bringing our total direct investment in this sector to $1.8 billion.

In parallel with pursuing investment opportunities related to the low-carbon transition, we remain focused on identifying, assessing, and managing emerging climate-related risks that have the potential to impact our business strategy. In 2023, this included conducting transition and physical risk scenario analyses to shed light on our long-term business resilience.

**Net Zero Operations by 2030**

Decarbonizing our operations is a key component of our overall climate strategy. In 2021, MassMutual committed to reach net zero emissions in our operations by 2030 and in 2023, we disclosed our interim target to reduce our absolute Scope 1 and Scope 2 emissions by 72 percent by 2027, compared to our 2019 baseline year. We considered available frameworks in formulating the target, including the SBTi's Corporate Net-Zero Standard. Our interim target is in line with a 1.5°C scenario and positions us on our path to reach net zero in our operations by 2030. To drive progress toward that ambition, we continue to identify and implement opportunities to reduce emissions, including through use of renewable energy. We collaborate cross-functionally, including with our wholly owned subsidiary MassMutual Ascend, guided by a multiyear roadmap and detailed annual work plans. In addition, we regularly track our emissions, and we review and report our progress.

**STRATEGY – CLOSE ENDED QUESTIONS**

- Has the insurer taken steps to engage key constituencies on the topic of climate risk and resiliency?* **Yes**
- Does the insurer provide products or services to support the transition to a low carbon economy or help customers adapt to climate risk? **Yes**
- Does the insurer make investments to support the transition to a low carbon economy? **Yes**
- Does the insurer have a plan to assess, reduce or mitigate its greenhouse gas emissions in its operations or organizations?* **Yes**

## RISK MANAGEMENT

3. *Disclose how the insurer identifies, assesses, and manages climate-related risks.*

*In disclosing how the insurer identifies, assesses, and manages climate-related risks, insurers should consider including the following:*

• Describe how the insurer considers the impact of climate related risks on its underwriting portfolio, and how the company is managing its underwriting exposure with respect to physical, transition and liability risk. *

• Describe any steps the insurer has taken to encourage policyholders to manage their potential physical and transition climate related risks, if applicable. *

• Describe how the insurer has considered the impact of climate-related risks on its investment portfolio, including what investment classes have been considered. *

*A. Describe the insurers' processes for identifying and assessing climate-related risks.*

*In describing the insurers' processes for identifying and assessing climate-related risks, insurers should consider including the following:*

- Discuss whether the process includes an assessment of financial implications and how frequently the process is completed. *

*B. Describe the insurer's processes for managing climate-related risks.*

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

*In describing how processes for identifying, assessing, and managing climate-related risks are integrated into the insurer's overall risk management, insurers should consider including the following:*

- Discuss whether climate-related risks are addressed through the insurer's general enterprise-risk management process or a separate process and how frequently the process is completed.
- Discuss the climate scenarios utilized by the insurer to analyze its underwriting risks, including which risk factors the scenarios consider, what types of scenarios are used, and what timeframes are considered.
- Discuss the climate scenarios utilized by the insurer to analyze risks on its investments, including which risk factors are utilized, what types of scenarios are used, and what timeframes are considered.

As a life insurance and financial products company, our most significant exposure to climate-related risks is associated with our GIA, although climate risks may also affect our products, suppliers, and physical operations.

MassMutual monitors a broad range of strategic, financial, and operational risks, including those related to sustainability and climate change. Climate risks are integrated into our ERM framework, enabling the identification, assessment, and management of climate risks across our organization. Our Global Sustainability Office collaborates with related business units to manage climate risks in standard business processes.

MassMutual conducted a climate risk assessment in 2023 to document potential climate-related risks to our business. This assessment, informed by the Task Force on Climate-related Financial Disclosures (TCFD) framework, considered transition and physical climate risks across our GIA, insurance products, and operations. Our Global Sustainability Office and ERM functions collaborated to identify and evaluate potential climate risks and mitigants over short-, medium-, and long-term time horizons.(3)

Following the climate risk assessment, we conducted transition and physical risk scenario analyses to delve more deeply into how a range of potential climate outcomes may impact our business. The transition risk scenario analysis evaluated potential impacts to our corporate bond portfolio under two climate scenarios developed by the Network for Greening the Financial System (NGFS): the Current Policies scenario and the Delayed Transition scenario. The analysis provided a sector-specific view of the diverse factors influencing the transition risk exposure of our corporate bond holdings through 2050.

The physical risk climate scenario analysis evaluated the exposure of select real estate assets, including our offices, supplier offices, and commercial real estate holdings, to acute and chronic climate risks over time. The exposure of assets to 11 climate perils, including tropical cyclone, drought, sea level rise, and flooding, was modeled under low (well below 2°C) and high (increase of 4.4°C by 2100) emissions climate scenarios through 2050.

The results of these assessments inform our continued integration of climate risks into our ERM framework. As we advance this work, we expect to gain additional insights into the potential impacts of climate change on our business and to adapt our metrics and processes accordingly.

(3) For the purpose of this exercise, time horizons have been defined as 1 to 4 years (short-term), 5 to 10 years (medium-term), and 11 to 30 years (long-term).

**RISK MANAGEMENT – CLOSE ENDED QUESTIONS**

- Does the insurer have a process for identifying climate-related risks? **Yes**
  - If yes, are climate-related risks addressed through the insurer's general enterprise-risk management process? **Yes**
- Does the insurer have a process for assessing climate-related risks? **Yes**
  - If yes, does the process include an assessment of financial implications? **Yes**
- Does the insurer have a process for managing climate-related risks? **Yes**
- Has the insurer considered the impact of climate-related risks on its underwriting portfolio?* **No**
- Has the insurer taken steps to encourage policyholders to manage their potential climate-related risks?* **No**
- Has the insurer considered the impact of climate-related risks on its investment portfolio?* **Yes**
- Has the insurer utilized climate scenarios to analyze their underwriting risk? **No**
- Has the insurer utilized climate scenarios to analyze their investment risk? **Yes**

## METRICS AND TARGETS

4. *Disclose the metrics and targets used to assess and manage relevant collateralized risks and opportunities where such information is material.*

*In disclosing the metrics and targets used to assess and manage relevant collateralized risks and opportunities where such information is material, insurers should consider including the following:*

• Discuss how the insurer uses catastrophe modeling to manage the climate-related risks to your business. Please specify for which climate-related risks the insurer uses catastrophe models to assess, if any.

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

*In disclosing the metrics used by the insurer to assess climate-related risks and opportunities in line with its strategy and risk management process, insurers should consider including the following:*

• In describing the metrics used by the insurer to assess and monitor climate risks, consider the amount of exposure to business lines, sectors, and geographies vulnerable to climate-related physical risks [answer in absolute amounts and percentages if possible], alignment with climate scenarios, [1 in 100 years probable maximum loss, Climate VaR, carbon intensity], and the amount of financed or underwritten carbon emissions.

*B. Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.*

*C. Describe the targets used by the insurer to manage climate-related risks and opportunities and performance against targets.*

Our commitments to achieve net zero greenhouse gas (GHG) emissions in our portfolio by 2050 and in our operations by 2030 comprise our quantitative climate objectives. We disclose our GHG emissions, including Scope 1 and Scope 2 emissions, and interim targets supporting our net zero commitments in our 2023 Sustainability Report(4).

**Net Zero Portfolio by 2050**

In 2023, we announced 2030 interim targets for our commercial mortgage loans and our power and energy public corporate portfolios, as part of our commitment to reach net zero emissions in our portfolio by 2050. In developing these interim targets, we referenced guidance from recognized frameworks, including those developed by the SBTi and PCAF. We selected these carbon-intensive sectors to start because they have credible transition pathways and represent meaningful emissions from our GIA.

We recognize that carbon accounting, particularly for financed emissions, is still in its initial stages of development. Given this evolving landscape, we anticipate that our methodologies will also be subject to change over time, as the quality of emissions data improves; new sources of data, guidance, and methodologies develop; and climate scenarios evolve. In line with the principles that guide our target implementation, we will continue to monitor new developments, transparently report on our progress, and adapt as needed.

We continue to build our internal capabilities to support our net zero commitments. This includes implementing a software platform to facilitate the calculation of emissions from both our operations and our investment portfolio, enhancing our ability to measure, manage, and report on our progress. As we improve our data-related processes, we plan to disclose our financed emissions, starting with the portfolios for which we have set interim targets.

**Net Zero Operations by 2030**

To advance progress toward our net zero 2030 operational emissions goal, we set an interim target to reduce our absolute Scope 1 and Scope 2 emissions by 72 percent by 2027, compared to our 2019 baseline year. We considered recognized frameworks in formulating our target, including the SBTi's Corporate Net-Zero Standard, and our interim target aligns with a 1.5°C scenario. To date, we have reduced our absolute Scope 1 and 2 GHG emissions by approximately 57 percent against our 2019 baseline.

(4) Available at: https://www.massmutual.com/global/media/shared/doc/sustainability/2023sustainabilityreport.pdf

**METRICS AND TARGETS – CLOSE ENDED QUESTIONS**

- Does the insurer use catastrophe modeling to manage your climate-related risks? **Yes**
- Does the insurer use metrics to assess and monitor climate-related risks? **Yes**
- Does the insurer have targets to manage climate-related risks and opportunities? **Yes**
- Does the insurer have targets to manage climate-related performance? **Yes**

* Asterisks represent questions derived from the original Climate Risk Disclosure Survey.