



Travelers Task Force on Climate-related Financial Disclosures Report 2018



Recent hurricanes and wildfires underscore the unpredictability of weather and how changing climate conditions could affect the frequency and severity of natural disasters. As an insurance company with property and casualty operations, the Travelers Companies, Inc. (together with its consolidated subsidiaries, Travelers or the Company) incorporates modeling and analytical techniques to better understand the impact of climate-related issues on our business and on our customers.

As a core part of our business, we continually monitor, assess and respond to the risks posed by changing climate conditions in order to provide products and services that both help our customers mitigate those risks and meet our long-term financial objectives. We also monitor opportunities presented by evolving climate conditions and more “environmentally friendly” trends in order to provide insurance products and services that address our customers’ needs.

This report discusses our approach to managing changing climate conditions consistent with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).¹

Governance

Board Oversight

Travelers Board of Directors and its Risk Committee consider changing climate conditions as part of, and integral to, overseeing our business and operations. The Board of Directors plays an important role in overseeing our Enterprise Risk Management (ERM) organization, including our company’s evaluation of potential risks relating to changing climate conditions. The Risk Committee of the Board, composed of six independent directors, assists the Board in overseeing the operational activities of our company and identifying and reviewing risks that could have a material impact on Travelers, including risks related to changing climate conditions.

Consistent with its Charter, the Risk Committee has oversight responsibility for climate-related strategies, processes and controls, including catastrophe risk modeling, reinsurance and product underwriting and pricing.

Senior Management

In addition to the Risk Committee and the other committees of the Board, our management-level enterprise risk and underwriting risk committees are key elements of our ERM structure and help to establish and reinforce our strong culture of climate risk management. A senior executive team, which includes the Chief Risk Officer and the Chief Underwriting Officer, oversees the ERM process.

We also have other business-level risk committees that meet multiple times a year with senior management to discuss potential risks to Travelers related to the environment and changing climate conditions. These business-level committees include the Enterprise Catastrophe Strategy and Analysis group, the Enterprise Risk Committee, the Emerging Issues Committee and the Climate, Energy and the Environment Committee (CEEC). As described in further detail under [Risk Management](#), the CEEC coordinates and supports climate-related initiatives and strategies across Travelers and is a venue to share information and leverage expertise.

¹ The inclusion of information contained in this report should not be construed as a characterization regarding the materiality or financial impact of that information. For a discussion of information that is material to Travelers, please see our [Annual Report on Form 10-K](#).

Strategy

Identified climate-related risks and opportunities

Travelers considers climate risks and opportunities across a range of time horizons:

TIME HORIZON	CONSIDERATIONS	CLIMATE RISKS (TRANSITION OR PHYSICAL)	CLIMATE OPPORTUNITIES
Short-term: 1–3 years	Aligns with the average length of a Travelers policy and the timeframe for which we perform detailed business plans.	<ul style="list-style-type: none"> Mandates on, and regulation of, existing products and services (transition) 	<ul style="list-style-type: none"> Increased revenue through demand for “green” building/LEED certification designations Increased revenue through demand for energy efficient, renewable and/or clean technology
Medium-term: 3–5 years	Aligns with our development and execution of business strategies that impact directional planning and market-related adjustments based on ongoing or changing conditions.	<ul style="list-style-type: none"> Changing emissions-reporting obligations (transition) 	<ul style="list-style-type: none"> Development of new products or services for renewable energy businesses through R&D and innovation Increased sales of Travelers automobile insurance products with new technologies
Long-term: 5–50 years	Aligns with longer-term changes (e.g., climate-related risk, energy consumption / energy sources) that present risks and opportunities that extend beyond the short- and medium-term.	<ul style="list-style-type: none"> Changes in frequency and severity of catastrophe losses and uncertainty surrounding weather volatility and climate-related risk (physical) 	<ul style="list-style-type: none"> Mitigation of risks over time for customers who utilize our Risk Control services

Climate Risks

The following are examples of specific climate-related risks Travelers has identified for each time horizon. The inclusion of these examples should not be construed as a characterization regarding materiality or financial impact of these risks.

For a discussion of risks that Travelers has determined could be financially material, please see our “Risk Factors” disclosure in our [Annual Report on Form 10-K](#).

1. Mandates on and regulation of existing products and services (Short-term transition)

Increased regulation adopted in response to potential changes in climate conditions may impact the Company and its customers. For example, from time to time, states pass legislation and regulators take action that could have the effect of limiting the ability of insurers to manage catastrophe risk, such as legislation prohibiting insurers from reducing exposures or withdrawing from catastrophe-prone areas or mandating that insurers participate in residual markets.

Increased insurance regulation in response to disasters or catastrophes may also include: imposing moratoriums on policy cancellation or non-renewal for non-payment of premium; establishing further claims handling requirements or procedures; imposing additional claims data reporting requirements; establishing mediation programs for resolution of disputed claims; and modifying adjuster licensing procedures for independent and public adjusters. Additionally, following catastrophes, there are sometimes legislative and administrative initiatives and court decisions that seek to expand insurance coverage for catastrophe claims beyond the original intent of the policies or seek to prevent the enforcement of the policy terms, including the application of deductibles. Costs associated with these risks vary depending on the specific action taken and are often hard to predict, but they could be significant. For example, participation in residual market mechanisms has, at times, resulted in, and could, in the future, result in significant losses or assessments to insurers, including Travelers. In addition, climate change regulation could increase the Company’s customers’ costs of doing business.

For example, insureds faced with carbon management regulatory requirements may have less available capital for investment in loss prevention and safety features which may, over time, increase loss exposures. Increased regulation may also result in reduced economic activity, which would decrease the amount of insurable assets and businesses.

2. Changing emissions-reporting obligations (Medium-term transition)

Uncertainty over the future of EPA regulations regarding air and water (including coal-related standards) may give rise to more environmental regulation at the state level. This, in turn, may result in differing sets of standards in each state, which could make insurance risk more difficult to underwrite and price, particularly as air and water travel beyond state boundaries. For example, in October 2017, the EPA announced its intention to repeal the Clean Power Plan (CPP). Repeal of federally established, consistent standards for CO₂ emissions from certain fossil fuel-fired power plants could result in states establishing their own individual standards, making underwriting and pricing more challenging. In addition, because tighter emissions controls, along with other factors, help drive the demand for cleaner renewable energy sources, the EPA's plan to repeal the CPP could adversely affect the growing renewable energy market by reducing the demand for renewable energy. Over time, this may result in lower demand for Travelers insurance products and services relating to renewable energy.

3. Changes in frequency and severity of catastrophe losses and uncertainty surrounding weather volatility and climate-related risk (Long-term physical)

The incidence and severity of catastrophes are inherently unpredictable, and it is possible that both the frequency and severity of natural catastrophic events could increase. Severe weather events over the last two decades have underscored the unpredictability of future climate trends, and potentially changing climate conditions could add to the frequency and severity of natural disasters and create additional uncertainty as to future trends and exposures. During that time period, the insurance industry experienced increased catastrophe losses due to a number of potential causal factors, including, in addition to weather/climate variability, more people living in high-risk areas, population growth in areas with weaker enforcement of building codes, urban expansion and an increase in the average size of a house. For example, hurricane activity has impacted areas further inland than previously experienced by us, and demographic changes have resulted in larger populations in coastal areas which historically have been subject to severe storms and related storm surge, thus expanding our potential for losses from hurricanes.

Additionally, both the frequency and severity of tornado and hail storms in the United States have been more volatile during the last decade. The frequency and severity of wildfire losses have also been elevated in more recent years. Demographic changes in areas prone to wildfires have expanded our potential for losses from wildfires. Moreover, the Company's catastrophe models may be less reliable due to the increased unpredictability in frequency and severity of severe weather events and emerging trends in climate conditions, among other factors. Also, as discussed in our [Annual Report on Form 10-K](#), we could experience more than one severe catastrophic event in any given period.

Climate Opportunities

The following are examples of specific climate-related opportunities Travelers has identified for each time horizon. The inclusion of these examples should not be construed as a characterization regarding materiality or financial impact of these opportunities.

1. Increased revenue through demand for “green” building/LEED certification designations (Short-term)

State and local regulatory requirements such as the OneNYC (GBEE - Greener, Greater Buildings Plan) drive renovation work that could lead to increased construction activity, potentially creating opportunities to grow our book of business in impacted states such as the Top 10 States for LEED: MA, NY, IL, HI, MD, MN, GA, CA, VA, CO, as well as Washington, DC. Travelers consults with industry advocates for better building standards that are designed to increase the survivability of commercial and residential structures. Travelers' specialized Construction casualty and surety teams, which also have expertise in “green” construction, provide: highly skilled underwriting; customized IndustryEdge[®] products for specific industries (such as our [IndustryEdge[®] for Electrical Contractors](#) and [IndustryEdge[®] for General Contractors](#)); and tailored programs and services to help reduce contractors' cost of risk, including risk associated with “green” construction products. IndustryEdge[®] is our fully integrated business risk solution which combines underwriting, risk control and claims services tailored to a range of different industries and businesses helping customers to reduce the cost of losses and mitigate their risks. A complete list of our IndustryEdge[®] product solutions for the Construction Industry is available on our [website](#).

2. Increased revenue through demand for energy efficient, renewable and/or clean technology (Short-term)

Environmental legislation and regulation on the state and local levels, such as those pertaining to solar energy, could lead to an increase in demand for Travelers products that respond to customer needs resulting from such regulation. For example, San Francisco's Green Building Code (SFGBC) has requirements for new building construction that facilitate the development of renewable energy facilities and living roofs. The SFGBC standard requires that 15% of the roof space on most new construction is solar. Effective January 1, 2017, SFGBC provides a "living roof" alternative that requires between 15 and 30% of roof space on most new construction to incorporate solar, living (green) roofs, or a combination of both. This allows developers to replace required solar with living roof at a rate of 2 square feet of living roof for every 1 square foot of solar. These requirements apply to all new residential and commercial buildings that have 2,000 square feet (or more) gross floor area and have 10 or fewer occupied floors. Growth in the renewable energy and clean technology industry segments, as a result of regulatory mandates or incentives or otherwise, could result in increased sales of specialized insurance and surety products that address renewable energy-associated risks (e.g., Travelers SolarPak®) and a potential increase in Business Insurance and Bond & Specialty Insurance net written premiums.

3. Development of new products or services for renewable energy businesses through R&D and innovation (Medium-term)

The Renewables Portfolio Standard (RPS) has been enacted in 29 states and Washington, DC, and Alternative Energy Portfolio Standards (AEPS) have been adopted by three states. These standards are part of the renewable energy and alternative energy frameworks established by the U.S. Department of Energy and individual states. In addition, eight states and one territory have set renewable energy goals that are expected to increase the need for renewable energy products and services. These standards and goals and the related increased demand for renewable energy products and services provides the opportunity to develop new insurance products tailored to changes in related markets. Our dedicated Global Renewable Energy Practice, which provides solutions for renewable energy businesses, enables Travelers to evaluate and pursue the opportunities presented by the expanding renewable energy industry, as discussed in further detail under [Capturing Climate Opportunities](#).

4. Increased sales of Travelers automobile insurance products with new technologies (Medium-term)

Auto emissions regulations throughout the U.S. may lead to an increase in demand, production and availability of hybrid and electric vehicles (EV), which could lead to increased sales of Travelers automobile insurance products for hybrid and EV autos. The projected substantial increase in the number of EVs and charging stations could lead to an increase in demand for Travelers products over time.

5. Mitigation of risks over time for customers who utilize our Risk Control services (Long-term)

Travelers Risk Control employs a network of safety and loss prevention professionals who provide assessment and consulting services to our customers and our Business Insurance (BI) domestic and international operations. Our network of 600+ Risk Control consultants and our self-service portal for business insurance customers provide a comprehensive framework and numerous planning resources, including individualized planning, to help businesses of all types plan for natural disasters, with a focus on safety and preserving business operations.

Climate trends, which manifest themselves over long periods of time, provide a long-term opportunity for Travelers Risk Control department to offer and develop services to help current and potential customers mitigate the risks associated with changing climate conditions. For example, to help mitigate and minimize property losses caused by weather-related events, Travelers Risk Control has developed a comprehensive framework of technical planning resources to assist customers with conducting business impact analyses to prioritize and implement risk management action plans and physical improvements. Risk Control monitors events and claim trends and partners with associations such as the Insurance Institute for Business & Home Safety to assess innovative building products and new technologies to minimize wind, hail, flood and wildfire exposures. This deep domain expertise allows us to help customers improve their resiliency over time.

In addition, our Risk Control professionals provide guidance to our customers that have incorporated “green” products or systems to reduce carbon emissions and/or increase environmental sustainability. These products and systems include, for example, solar panels on residential and commercial rooftops, lithium ion batteries used to store solar energy and vegetative roofs on commercial buildings.

Travelers Risk Control maintains technical committee memberships on the National Fire Protection Association (NFPA), UL Fire Council, the Property Insurance Research Association and other associations to research and evaluate the reliability and fire safety of “green” products and systems to determine how these products and systems impact fire, structural and safety exposures. This knowledge is used to continually update our views and empowers our Risk Control professionals to help our customers mitigate the risks associated with changing climate conditions and “green” trends, with a goal of improving outcomes while strengthening customer relationships.

Process Used to Determine Climate-Related Risks

Travelers uses various analyses and methods, including proprietary and third-party modeling processes, to determine our climate-related risks and make underwriting, pricing and reinsurance decisions designed to manage the Company’s exposure to catastrophic events. In addition to catastrophe modeling and analysis, Travelers also models and analyzes the Company’s exposure to other extreme events. We also utilize proprietary and third-party modeling processes to evaluate capital adequacy. These analytical techniques are an integral component of our ERM process and further support our long-term financial strategies and objectives.

As discussed in both Governance and Risk Management, business-level risk committees play an active role in developing and executing our ERM strategy. The Climate, Energy and Environment Committee (CEEC) includes two subcommittees that are directly involved with determining climate-related risks and opportunities, respectively: The Risk Identification & Management subcommittee, discussed immediately below, and the Products, Market Development & Customer Services subcommittee, discussed under [Process Used to Determine Climate-Related Opportunities](#).

The Risk Identification & Management subcommittee includes representatives from our Enterprise Risk Management function; our Catastrophe Strategy and Underwriting groups; our business underwriting groups across the Company; our Risk Control function; and the Investment, Legal and Regulatory functional areas. The subcommittee meets regularly to discuss and assess climate-related issues, risks and trends. The subcommittee stays current on climate-related and environmental risks, including through industry publications and external conferences, and actively monitors various relevant risk factors such as:

- climate-related litigation and novel theories of liability;
- legal and regulatory requirements impacting climate, energy and the environment;
- market-based policies that put a price on greenhouse gases such as carbon pricing or cap-and-trade programs;
- efforts by states, nations and non-governmental organizations to adopt policies or implement programs designed to reduce emissions impacting global temperatures; and
- impacts related to emerging “clean” or “green” energy and technology trends and products.

The subcommittee also receives regular updates from internal subject matter experts regarding emerging scientific analyses and published reports relating to weather trends and the effects of changing climate conditions. The majority of these publications focus on forward-looking impacts. These publications include:

- materials issued by the U.N. Intergovernmental Panel on Climate Change (IPCC);
- the National Climate Assessment Reports issued in the U.S. by the National Oceanic and Atmospheric Administration (NOAA) as part of the U.S. Global Change Research Program (USGCRP); and
- articles published in scientific journals.

When a potential risk is identified, the subcommittee engages in a comprehensive process to evaluate the risk. This process involves the relevant internal stakeholder groups and, as appropriate, may be elevated under our ERM framework for discussion with senior management and the Board of Directors.

Separately, the Enterprise Catastrophe Strategy and Analysis group assesses catastrophe (CAT) risk and manages the development of our strategic CAT efforts, including the use of proprietary and third-party models and geospatial analysis to analyze CAT events and related risks.

This group actively monitors and evaluates changes in third-party models and, as needed, calibrates the CAT risk model estimates delivered via our proprietary processes. We consider CAT model stochastic loss estimates, historical loss experience, loss trend projections, lessons learned from recent events, underwriting practices, market share analyses, external scientific analyses and other factors, including non-modeled losses, to refine our proprietary view of CAT risk. We continually update our proprietary models, which are an integral part of our ERM process and support our long-term financial strategies and objectives, as new information and techniques emerge. Importantly, in addition, our underwriting appetite evolves as the environment evolves, and we modify our underwriting if we believe that the risks exceed our risk appetite. Finally, as discussed under Underwriting, Pricing and Mitigation of Climate Risks, in addition to factoring in catastrophe models and historical experience, we are able to respond quickly to changing conditions since most of our policies renew annually. This gives us the flexibility to adjust our underwriting strategy and related policy terms and conditions as appropriate.

For more information regarding how our process to determine climate-related risks is integrated within our ERM framework, please see [Risk Management](#).

Process Used to Determine Climate-Related Opportunities

The business lead for the Global Renewable Energy Practice is the chair of one of the subcommittees of the CEEC, the Products, Market Development & Customer Services subcommittee. The subcommittee consists of Travelers specialized industry experts, who collaborate, among other things, on:

- identifying potential new products and assessing their feasibility;
- exploring potential new markets;
- monitoring the impact of climate and “green” trends on current product offerings; and
- sharing ideas and exploring possibilities to avail ourselves of additional climate-related opportunities.

When we identify a potential opportunity, we conduct a vigorous process to evaluate the viability of the opportunity as well as the risks associated with the opportunity. This process involves experts from the relevant disciplines across the organization, including industry experts and our Risk Control professionals. After a determination is made that a product is viable and within our risk appetite, further vetting is conducted through our ERM process prior to product development and/or launch.

Impact of Climate-Related Risks and Opportunities on Travelers’ Business and Strategy

Our approach to climate-related risks and opportunities is multi-faceted, and we believe it allows us to mitigate our exposure to climate-related risk and provide products and services that both help our customers mitigate those risks and meet our long-term financial objectives. Our approach includes underwriting and pricing to manage transition and physical risks, as well as monitoring “green” trends and offering products and tailoring pricing to respond to climate-related opportunities. Other aspects of our strategy include advocating for and supporting community resiliency and improving our eco-efficient operations.

Underwriting, Pricing and Mitigation of Climate Risks

Our risk appetite is dependent on our ability to understand the property and casualty risks that we underwrite. We try to avoid exposures that cannot be evaluated or have unacceptable levels of uncertainty. Understanding climate-related effects on weather perils is part of this fundamental evaluation process, which includes the underwriting and pricing risks of many of our products.

Pricing of Travelers’ property and casualty insurance products is generally developed based upon a number of factors, including an estimation of expected losses, the expenses associated with producing, issuing and servicing business and managing claims, the time value of money related to the expected loss and expense cash flows, and a reasonable profit margin that considers, among other factors, the capital needed to support the Company’s business. Travelers has a disciplined approach to underwriting and risk management that emphasizes product returns and profitable growth over the long-term rather than premium volume or market share.

Catastrophe Modeling

Core to our strategy is the incorporation of weather and climate variability into our underwriting and pricing decisions. Our catastrophe modeling, as described under Process Used to Determine Climate-Related Risks above, is critical to this effort.

It is important to note that there are no industry-standard methodologies or assumptions for projecting catastrophe exposure. Accordingly, catastrophe estimates provided by different insurers may not be comparable.

Based on our proprietary and third-party computer models utilized by the Company at December 31, 2018, the table below sets forth the probabilities that estimated losses, comprising claims and allocated claim adjustment expenses (but excluding unallocated claim adjustment expenses), from a single event occurring in a one-year timeframe will equal or exceed the indicated loss amounts (expressed in dollars, net of tax, and as a percentage of the Company's common equity). For example, on the basis described in the table below, the Company estimates that there is a one percent chance that the Company's loss from a single U.S. and Canadian hurricane in a one-year timeframe would equal or exceed \$1.6 billion, or 7% of the Company's common equity at December 31, 2018.

LIKELIHOOD OF EXCEEDANCE ¹	DOLLARS (IN BILLIONS)		PERCENTAGE OF COMMON EQUITY ²	
	SINGLE U.S. AND CANADIAN HURRICANE	SINGLE U.S. AND CANADIAN EARTHQUAKE	SINGLE U.S. AND CANADIAN HURRICANE	SINGLE U.S. AND CANADIAN EARTHQUAKE
2.0% (1-in-50)	\$1.2	\$0.5	5%	2%
1.0% (1-in-100)	\$1.6	\$0.7	7%	3%
0.4% (1-in-250)	\$2.2	\$1.2	9%	5%
0.1% (1-in-1,000)	\$4.6	\$1.8	20%	8%

¹ An event that has, for example, a 2% likelihood of exceedance is sometimes described as a "1-in-50 year event." As noted above, however, the probabilities in the table represent the likelihood of losses from a single event equaling or exceeding the indicated threshold loss amount in a one-year timeframe, not over a multi-year timeframe. Also, because the probabilities relate to a single event, the probabilities do not address the likelihood of more than one event occurring in a particular period, and, therefore, the amounts do not address potential aggregate catastrophe losses occurring in a one-year timeframe.

² The percentage of common equity is calculated by dividing (a) indicated loss amounts in dollars by (b) total common equity excluding net unrealized investment gains and losses, net of taxes, included in shareholders' equity. Net unrealized investment gains and losses can be significantly impacted by both discretionary and other economic factors and are not necessarily indicative of operating trends. Accordingly, the Company's management uses the percentage of common equity calculated on this basis as a metric to evaluate the potential impact of a single hurricane or single earthquake on the Company's financial position for purposes of making underwriting and reinsurance decisions.

The threshold loss amounts in the table above, which are based on the Company's in-force portfolio at December 31, 2018 and catastrophe reinsurance program at January 1, 2019, are net of reinsurance, after-tax and exclude unallocated claim adjustment expenses, which historically have been less than 10% of loss estimates. For further information regarding the Company's reinsurance, see "Item 1 - Reinsurance" in our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2018. The amounts for hurricanes reflect U.S. and Canadian exposures and include property exposures, property residual market exposures and an adjustment for certain non-property exposures. The hurricane loss amounts are based on the Company's catastrophe risk model estimates and include losses from the hurricane hazards of wind and storm surge. The amounts for earthquakes reflect U.S. and Canadian property and workers compensation exposures. The Company does not believe that the inclusion of hurricane or earthquake losses arising from other geographical areas or other exposures would materially change the estimated threshold loss amounts.

Catastrophe modeling relies upon inputs based on experience, science, engineering and history. These inputs reflect a significant amount of judgment and are subject to changes which may result in volatility in the modeled output. Catastrophe modeling output may also fail to account for risks that are outside the range of normal probability or are otherwise unforeseeable. Catastrophe modeling assumptions include, among others, the portion of purchased reinsurance that is collectible after a catastrophic event, which may prove to be materially incorrect. Consequently, catastrophe modeling estimates are subject to significant uncertainty. In the table above, the uncertainty associated with the estimated threshold loss amounts increases significantly as the likelihood of exceedance decreases. In other words, in the case of a relatively more remote event (e.g., 1-in-1,000), the estimated threshold loss amount is relatively less reliable. Actual losses from an event could materially exceed the indicated threshold loss amount. In addition, more than one such event could occur in any period.

Moreover, Travelers is exposed to the risk of material losses from other than property and workers compensation coverages arising out of hurricanes and earthquakes, and it is exposed to catastrophe losses from perils other than hurricanes and earthquakes, such as tornadoes and other windstorms, hail, wildfires, severe winter weather, floods, tsunamis, volcanic eruptions and other naturally-occurring events, such as solar flares.

For more information about the Company's exposure to catastrophe losses, see our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2018, under "Item 1A-Risk Factors-Catastrophe losses could materially and adversely affect our results of operations, our financial position and/or liquidity, and could adversely impact our ratings, our ability to raise capital and the availability and cost of reinsurance" and "Item 1A-Risk Factors-We may be adversely affected if our pricing and capital models provide materially different indications than actual results."

External Studies

In addition to catastrophe modeling, we evaluate the findings contained in governmental reports, such as the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5; 2014) and the U.S. Fourth National Climate Assessment Reports (NCA4 volumes 1 and 2; 2017-2018), as well as other external scientific studies related to climate to assess potential impacts on our underwriting and pricing decisions. For example, we have evaluated the extent to which phases of the Atlantic Multi-Decadal Oscillation, the El Niño Southern Oscillation, the North Atlantic Oscillation and Saharan dust conditions may influence changes in basin frequency, severity or U.S. landfall risk of hurricanes.

Catastrophe Experience

Our catastrophe underwriting also incorporates lessons learned from recent events like the 2017 Tubbs Wildfire (California) and the 2018 Camp Wildfire (California), as well as from past events like Hurricanes Harvey and Katrina and Superstorm Sandy.

Those lessons are reflected in our:

- Disciplined approach to terms and conditions which are designed to make outcomes more predictable;
- [Risk control initiatives](#), which help us with risk mitigation, selection and pricing;
- Proprietary flood underwriting, which factors in building footprints compared to segmented flood zones; and
- Proprietary wildfire underwriting, which factors in terrain slope, vegetation density and propensity to burn, road access including proximity to fire stations, as well as historical footprints.

As it relates to the California wildfires in particular, we now view events such as those of the last two years as being less remote than we thought previously. As a consequence of that, as well as the longer-term trend in catastrophe losses, for certain perils we have weighted our more recent experience somewhat more heavily than we otherwise would have in modeling catastrophe losses going forward.

Additional Factors Limiting Our Exposure to Climate-Related Risks

In addition to factoring in catastrophe models, external studies and historical experience, we are able to mitigate our exposure to climate-related risks including through the following:

- **Annual Policies.** We are able to respond quickly to changing conditions since most of our policies renew annually. This gives us the flexibility to adjust our pricing, underwriting strategy and related policy terms and conditions, as appropriate. In addition to making short-term tactical adjustments to our underwriting strategy and product pricing based on the climate-related risks we identify, we monitor climate-related risks on a medium- and long-term horizon to arrive at a holistic view of climate-related impacts on our business, further allowing us to adjust and refine our strategy, products and pricing.
- **Reinsurance.** Informed by our risk selection, claims experience and risk appetite, we reinsure a portion of the risks we underwrite to further manage our exposure to losses and to protect our capital. We cede to reinsurers a portion of these risks and pay premiums based upon the risk and exposure of the policies subject to such reinsurance. We conduct an ongoing review of our risk and catastrophe coverages and, from time to time, make changes to our reinsurance program as we deem appropriate. For example, Travelers utilizes a corporate catastrophe excess-of-loss reinsurance treaty with unaffiliated reinsurers to manage its exposure to losses resulting from catastrophes and to protect its capital. In addition to the coverage provided under this treaty, Travelers also utilizes catastrophe bonds to protect against certain weather-related losses in the Northeastern United States, and a Northeast catastrophe reinsurance treaty to protect against losses resulting from weather-related catastrophes in the Northeastern United States. To address some ongoing degree of uncertainty surrounding weather volatility, we recently added a new catastrophe reinsurance treaty to our overall reinsurance program for 2019. For further discussion of our reinsurance program, see our [Annual Report on Form 10-K](#).

- **Product Diversity.** Product diversity also limits our exposure to climate-related risks. We engage broadly across the seven major lines of insurance, and our portfolio is balanced across these lines of business. Travelers is the only commercial insurer with a top-five position in six major product lines, including a #1 position in three (workers compensation, commercial multi-peril and surety).² Our Business Insurance segment accounts for more than half of our net written premiums and includes product lines that are less susceptible to climate-related risks, such as workers compensation and general liability. Likewise, our Bond & Specialty Insurance segment offers primarily fidelity, surety, cyber, management liability and professional liability products. In 2018, 62.9% of domestic premiums were from liability lines (e.g., workers compensation, management liability, general liability, auto insurance), whereas 37.1% of domestic premiums came from property lines (e.g., homeowners and commercial property). See the [Business Strategy and Competitive Advantages](#) section of our sustainability website to learn more about our product breadth and specialization.

² S&P Global Market Intelligence 2017 U.S. Statutory DWP: CMP, Commercial Auto, General Liability, Management & Professional Liability, Workers Compensation based on TRV definitions. The Surety & Fidelity Association of America. Market Share rankings based on 2017 direct written premium: Surety.

Capturing Climate Opportunities

Travelers is positioned to benefit from the increased economic activity by insuring more renewable energy projects globally. Our dedicated Global Renewable Energy Practice provides solutions for the life span of a renewable energy business, from research and development and manufacturing to permanent operations, as well as on- and off-shore wind, solar and biopower operations. This practice is designed to help Travelers capture a greater share of the expanding renewable energy industry domestically and internationally, as trends toward renewable and clean energy sources continue to accelerate. For example, our WindPak[®] and SolarPak[®] products respond to unique coverage issues for the wind and solar industries based in the U.S. We have expanded our international footprint for on- and off-shore wind and solar operations throughout Asia, Europe, U.K., Mexico, and the Canadian markets with our unique coverages written through Travelers Lloyd's Syndicate 5000.

We continue to aggressively pursue the renewable energy sector, such as by providing coverages for commercial and residential solar installations globally and for on-shore and off-shore wind farms globally, including the first U.S. off-shore wind farm project, Block Island Wind Farm. For the three-year period ended December 31, 2018, our Global Renewable Energy Practice — domestically and internationally — grew its gross written premiums by a compounded annual growth rate of over 35%.

We also offer specialized coverage, as well as discounts or rebates where permissible, to encourage adoption of fortified home construction, green buildings and hybrid/electric vehicles. Examples of our current product offerings include the following:

- **Green Building Coverages:** A suite of Green Building coverages that respond to the unique coverage issues of “green” buildings and provide for the additional costs to help policyholders repair, replace or rebuild with “green” materials after a loss;
- **LEED Certification Discount:** A discount of up to 5% for homes that are LEED (Leadership in Energy and Environmental Design) certified;
- **FORTIFIED Discount:** A discount of up to 25% on hurricane premium for homes built to the FORTIFIED Gold Standard of the Insurance Institute for Business and Home Safety (IBHS);
- **Alternative Fuel Vehicle Discount:** A discount of up to 10% for hybrid, electric or flexible fuel vehicles;
- **Hybrid Boat Discount:** A discount of up to 10% for hull and liability coverages on hybrid boats and yachts, available in certain states and subject to individual eligibility; and
- **Electric Boat Discount:** A discount of up to 10% for electric boats run by motors instead of engines, available in certain states and subject to individual eligibility.

Other Aspects of Travelers Climate Strategy

In addition to accounting for climate risk in our underwriting and pricing decisions and providing products and product features that capture climate-related opportunities, our climate strategy includes the following components:

- **Advocating for Community Resiliency.** Travelers sponsors the Insurance Institute for Business and Home Safety (IBHS), the BuildStrong Coalition, Habitat for Humanity[®] and the Wharton Risk Center to promote stronger building codes and more resilient communities and to influence industry standards and best practices.

We participate on the board of IBHS, an independent, non-profit, scientific research organization supported by property insurance and reinsurance companies. Through our research partnership with IBHS, we have gained a better understanding of severe wind, hail and fire impacts on building engineering standards. Travelers has incorporated the scientific information into our approaches for rating and underwriting. We also participate on the board of the BuildStrong Coalition, a group composed of national business and consumer organizations, companies and emergency management officials. BuildStrong is dedicated to advocating for federal government legislation and incentivizing state adoption and enforcement of building codes to protect property, save lives from the devastation of natural disasters and reduce loss costs. In 2018, national mitigation and resiliency efforts benefited from the enactment of the Disaster Recovery Reform Act. Long a priority for Travelers and the BuildStrong Coalition, Congress has now provided states and localities with dedicated pre-disaster and post-disaster funding opportunities that will save lives and help communities reduce the future costs of natural disasters by helping homeowners fortify their homes using IBHS proven technologies.

- **Improving Our Eco-Efficient Operations.**

We continuously analyze our impacts on the environment and look for cost-effective ways to minimize those impacts. We utilize an environmental management system that regularly reviews our operations to measure and find ways to lessen our environmental impacts. Some of the key elements of our environmental management system include: periodic recommissionings of facilities; evaluating emerging technologies, such as alternative energy, and their potential use in our facilities; partnering with power and other utility providers to review our operations and, when available, leveraging their incentive programs to help fund our improvements; using technology to fine tune operational parameters; and with respect to waste, minimizing and recycling as much waste as possible.

Additional detail on these aspects of our strategy can be found in the [Climate Strategy](#) and [Eco-Efficient Operations](#) sections of our sustainability website.

Risk Management

Travelers employs a long-term financial strategy to manage risk/reward over time. We continuously measure results to understand the performance of our products and businesses and apply our collaborative understanding of risk to adjust our current view of risk/reward, as appropriate. Through our Enterprise Risk Management (ERM) framework, we actively evaluate the risk/reward relationships on both an individual and portfolio basis. This evaluation impacts the risks we decide to insure and the appropriate rate to charge. The Enterprise Underwriting department is one of the key internal risk management functions at Travelers. Enterprise Underwriting defines and manages Travelers corporate underwriting risk appetite and controls to ensure consistency across the enterprise. Enterprise Underwriting also defines and manages the related underwriting authority standards and thresholds and each business operates within the defined authority standards.

Risk management for changing climate conditions is addressed within our business model and ERM framework. As part of our ERM process, business and corporate groups work to identify and assess climate-related risks, both physical and transitional. We regularly review emerging issues, including changing climate conditions, to consider potential changes to our risk models and their use, as well as to help assess the need to adjust underwriting, pricing or reinsurance strategies, coverage terms and conditions or to develop new products or otherwise explore climate-related opportunities. We evaluate event exposures using CAT models, as discussed under [Strategy](#) above, and report aggregate exposure and strategies regularly to management and the Risk Committee of the Board. For more details on how we incorporate climate-related risks into our reinsurance portfolios, see [Underwriting, Pricing and Mitigation of Climate Risks](#).

Our integrated, iterative and collaborative ERM process includes evaluating risk and reward, setting underwriting and operational strategies, and monitoring the results of our efforts. As part of our process, we consider various external environments and influences, including the economy and insurance marketplace, views of regulators, the investment community and rating agencies.

For climate-related risks — both physical and transitional — several management groups and business-level risk committees, including the Enterprise Catastrophe Strategy and Analysis group, the Enterprise Risk Committee, the Emerging Issues Committee and the Committee on Climate, Energy and the Environment (CEEC), advise the Board and its Risk Committee. The CEEC coordinates and supports climate-related initiatives and strategies across Travelers and is a venue to share information and leverage expertise. The CEEC has four subgroups, each led by senior staff and aligned with a key area of focus:

- 1. Risk Identification & Management** (discussed in further detail under [Process Used to Determine Climate-Related Risks](#)): Supports business activities to identify, monitor, and assess climate-related risks. Participants include Enterprise Risk Management, Emerging Issues group, Enterprise Catastrophe Strategy and Analysis, Investments, Government Relations, Risk Control, Claim, Global Renewable Energy Practice and Enterprise Underwriting.
- 2. Products, Market Development & Customer Services** (discussed in further detail under [Process Used to Determine Climate-Related Opportunities](#)): Supports activities to identify and develop product opportunities, explore potential new markets, and expand services to help customers prepare for and respond to potential risks related to changing climate and “green” trends. Participants include Business Insurance Underwriting and Product, Enterprise Underwriting, Risk Control, Claim, the Global Renewable Energy Practice group, and all business units.
- 3. External Relations, Communications & Industry Leadership:** Supports Travelers external-facing corporate groups on matters pertaining to climate, energy, and the environment. Participants include the Travelers Institute, Government Relations, Corporate Communications, Enterprise Catastrophe Strategy and Analysis, Enterprise Underwriting, Risk Control, Community Relations, and Investor Relations.
- 4. Facilities & Operations Management:** Coordinates the Company’s initiatives and activities to develop and implement environmentally responsible corporate practices, including establishing and implementing emission reduction practices and monitoring progress in achieving emission reduction goals. Participants include Travelers Facilities Managers.

For a more complete discussion of our ERM framework, please see our [Annual Report on Form 10-K](#) for the fiscal year ended December 31, 2018.

Metrics & Targets

We measure a variety of climate-related metrics that inform our climate and overall business strategies. We also set GHG targets to monitor our eco-operational efficiencies.

Catastrophe Losses

On an annual basis, we monitor changes in catastrophe model output on our book of business, changes in the state-of-the-science, and weather and non-weather loss trends as part of the natural catastrophe planning process by business unit and by peril.

(DOLLARS IN MILLIONS)	2018	2017	2016
Catastrophe Losses (pre-tax)	\$1,716	\$1,949	\$877
Catastrophe Losses (after-tax)	\$1,355	\$1,267	\$576
Earned Premiums Ceded (Reinsurance Premiums) ¹	\$1,501	\$1,471	\$1,603
Reinsurance Recoverable ¹	\$8,370	\$8,309	\$8,287

¹For total company, including related to catastrophes.

The Company defines a “catastrophe” as an event that:

- is designated a catastrophe by internationally recognized organizations that track and report on insured losses resulting from catastrophic events, such as Property Claim Services (PCS) for events in the United States and Canada; and
- the Company’s estimates of its ultimate losses before reinsurance and taxes exceed a pre-established dollar threshold.

The Company’s threshold for disclosing catastrophes is primarily determined at the reportable segment level. If a threshold for one segment or a combination thereof is exceeded and the other segments have losses from the same event, losses from the event are identified as catastrophe losses in the segment results and for the consolidated results of the Company. Additionally, an aggregate threshold is applied for International business across all reportable segments. The threshold for 2018 ranged from approximately \$18 million to \$30 million of losses before reinsurance and taxes.

The following table presents the amount of losses recorded by the Company for significant catastrophes that occurred in 2018, 2017 and 2016, the amount of net unfavorable (favorable) prior year reserve development recognized in 2018 and 2017 for catastrophes that occurred in 2017 and 2016, and the estimate of ultimate losses for those catastrophes at December 31, 2018, 2017 and 2016. For purposes of the table, a significant catastrophe is an event for which the Company estimates its ultimate losses will be \$100 million or more after reinsurance and before taxes.

(IN MILLIONS, PRE-TAX AND NET OF REINSURANCE)	LOSSES INCURRED / UNFAVORABLE (FAVORABLE) PRIOR YEAR RESERVE DEVELOPMENT FOR THE YEAR ENDED DECEMBER 31,			ESTIMATED ULTIMATE LOSSES AT DECEMBER 31,		
	2018	2017	2016	2018	2017	2016
2016						
PCS Serial Number:						
21 – Severe wind and hail storms	\$ (2)	\$ (2)	\$ 150	\$ 146	\$ 148	\$ 150
25 – Severe wind and hail storms	(7)	10	168	171	178	168
2017						
PCS Serial Number:						
22 – Severe wind and hail storms	(2)	111	n/a	109	111	n/a
32 – Severe wind and hail storms	19	210	n/a	229	210	n/a
43 – Hunicane Harvey	(24)	254	n/a	230	254	n/a
44 – Hunicane Irma	(28)	187	n/a	159	187	n/a
48 – California wildfire – Tubbs fire	1	507	n/a	508	507	n/a
2018						
PCS Serial Number:						
15 – Winter storm	144	n/a	n/a	144	n/a	n/a
17 – Severe wind and hail storms	111	n/a	n/a	111	n/a	n/a
33 – Severe wind and hail storms	117	n/a	n/a	117	n/a	n/a
52 – Hunicane Florence	106	n/a	n/a	106	n/a	n/a
57 – Hunicane Michael	158	n/a	n/a	158	n/a	n/a
59 – California wildfire - Camp fire	334	n/a	n/a	334	n/a	n/a
60 – California wildfire - Woolsey fire	119	n/a	n/a	119	n/a	n/a

n/a=not applicable

Eco-Operational Efficiency

Reducing our carbon footprint is one aspect to our climate strategy. Travelers set a goal to reduce our absolute Scope 1 and 2 emissions by 40% by 2020, based on a 2011 base year. As of year-end 2017, we have achieved 88% of this goal.³

	2018	2017	2016
Scope 1 GHG Emissions (metric tons CO ₂ e)	25,591	26,640	37,436
Emissions from Mobile Combustion (metric tons CO ₂ e)	24,329	25,405	36,574
Emissions from Office Activity (metric tons CO ₂ e)	1,262	1,235	862
Scope 2 GHG Emissions* (metric tons CO ₂ e)	29,881	28,250	47,167
Total Scope 1 and Scope 2 GHG Emissions (metric tons CO ₂ e)	55,472	54,890	84,603
GHG Emissions per Revenue (metric tons CO ₂ e per \$)	0.00000183	0.00000189	0.0000033248
GHG Emissions per FTE (metric tons CO ₂ e per person)	1.85	1.83	2.76
Scope 3 Emissions from Travel	18,584	18,175	Not Tracked
Percentage of Electricity from Renewable Sources	17%	15%	Not Tracked
Percentage of Total Energy from Renewable Sources	5%	4.5%	Not Tracked

³As of the date of this report's publication, 2018 information regarding our eco-operational efficiency is not yet available.

*Location-based method

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Important Legal Information

This report contains information about Travelers. Travelers disclaims any duty or obligation to update such information. Any “forward-looking statement” is made only as of the date such information was originally prepared by Travelers and is intended to fall within the safe harbor for forward-looking information provided in the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, may be forward-looking statements. Words such as “may,” “will,” “should,” “likely,” “anticipates,” “expects,” “intends,” “plans,” “projects,” “believes,” “estimates” and similar expressions are used to identify these forward-looking statements. These statements include, among other things, statements about our investment portfolio, new product offerings, catastrophe losses and modeling and market risk. Results may differ materially from those expressed or implied by forward-looking statements. Factors that can cause results to differ materially include those described under “Forward Looking Statements” in the Corporation’s most recent Form 10-K and Form 10-Qs filed with the SEC and available on our website.

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