

The Changing Climate of Property Insurance

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I. Introduction

Climate change has emerged as one of the most significant issues facing the planet. The business community largely recognizes that it will be impacted by the politics, economics and physical effects of climate change, sooner rather than later. For the insurance industry, whose business is all about risk management, the risk simply is too great to ignore. In fact, some view the insurance industry as the “canary-in-the-coal-mine” because it is one of the principal areas where the financial impact of climate change will first manifest. The purpose of this paper is to highlight the risks and opportunities that climate change and the related regulatory steps being taken to impede and halt global warming pose for the property insurance market.

II. Climate Change Overview

A. The Science of Climate Change

The consensus of the international scientific community is that the earth is getting warmer and that human activities have contributed to that warming.⁴ In its 2007 Synthesis Report on Climate Change, the Intergovernmental Panel on Climate Change (IPCC), a United Nations group made up of over 2000 scientists, stated:

Global Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.⁵

According to scientists, the average global temperatures have risen by more than 1 degree Fahrenheit over the last 100 years, with this warming trend accelerating in recent years.⁶ The IPCC predicts that temperatures will rise by two and a half to ten degrees Fahrenheit in the next 100 years.⁷

Moreover, the IPCC concludes that human activities are contributing to the warming. Specifically, man-made greenhouse gasses (GHGs), particularly carbon dioxide, are being pumped into the atmosphere, which alters the process by which the naturally occurring GHGs trap the sun’s heat before being released back into space. While the natural “greenhouse effect” allows the earth to stay warm and habitable, the

⁴ *Climate Change 101: The Science and Impacts*, Pew Center on Global Climate Change, available at: http://www.pewclimate.org/docUploads/101_Science_Impacts.pdf.

⁵ *Summary of Policymakers of the Synthesis Report of the IPCC Fourth Assessment Report* (Nov. 16, 2007).

⁶ *Climate Change 101: The Science and Impacts*.

⁷ *Id.*

“enhanced greenhouse effect” caused by man-made GHGs traps even more of the sun’s heat, causing global temperatures to rise.⁸

As a result of increased global temperatures, scientists have identified and predicted a variety of changes in the global climate. A few of the major changes include: 1) a rise in global sea levels by up to three feet by the end of the century which will significantly impact and/or inundate low-lying coastal communities; 2) melting of polar ice caps which will intensify global warming and create a significant rise in sea levels [researchers predict that if the Greenland Ice Sheet completely melts, global sea levels would rise by almost 20 feet, permanently flooding virtually all of America’s major coastal cities]; 3) loss of mountain glaciers which would contribute to sea level rise and pose a threat to global water supplies; and 4) changing weather patterns including more floods and droughts, extended heat waves, and stronger hurricanes.⁹

B. Climate Change Regulation

With the realization that climate change will impact all of society, leaders are taking steps globally, nationally, and locally to curb climate change.

1. Cap and Trade Systems

One of the most discussed methods for reducing the emissions of GHGs is the implementation of a “cap and trade” system.

Under cap and trade systems, countries, states and/or specific businesses are assigned a “cap” on the amount of carbon emissions they are allowed to release. The cap is generally defined as a specific number of credits. Over time, the cap is reduced. If the business is able to reduce its emissions below the cap, it can sell its remaining credits to businesses that have not reduced their emissions. If a business cannot reduce its emissions below the cap, it must purchase credits from other participants. This provides an economic incentive to implement cleaner and more environmentally-friendly practices.

Cap and trade systems were invented in the United States. While carbon trading is a new phenomenon, sulfur dioxide trading for coal-fired utilities has been in place in the U.S. since 1990 under the Acid Rain Program. Title IV of the 1990 Clean Air Act set a cap on the total amount of sulfur dioxide that can be emitted under U.S. emissions allowances. Businesses can buy, trade, or sell their allowances. Since the Acid Rain Program was introduced, sulfur dioxide emissions have been significantly reduced.

Although the United States federal government has not yet adopted a cap and trade system for carbon dioxide or other GHGs, international, regional, and voluntary cap and trade systems are already up and running, and all indicators suggest a mandatory federal program may soon follow.

⁸ *Id.*

⁹ *Id.*

2. The Kyoto Protocol

The first significant international cap and trade system was part of the Kyoto Protocol. The Protocol was signed in Japan in 1997 and took effect in 2005.¹⁰

The Kyoto Protocol requires developed countries to reduce their GHG emissions below specified levels. Developed countries must reduce their GHG emissions by an average of 5% below their 1990 levels within a five-year time period between 2008 and 2012. Under the Protocol's carbon trading scheme, countries that cannot meet their GHG reduction requirements can buy the right to emit a certain amount of carbon dioxide from another country that has already met its obligations.¹¹

The Protocol includes three means for reaching targeted reductions: 1) carbon trading schemes in which countries can buy and sell carbon credits, 2) the Clean Development Mechanism which allows developed countries to obtain credits by investing in projects that reduce greenhouse gas emissions in developing countries, rather than their own, and 3) Joint Implementation which allows a developed country to invest in projects that reduce GHGs in other developed countries.

Some critics of the Protocol argue that it unfairly burdens developed countries, while developing countries such as Brazil, China, India, and others effectively face no limits at all. Citing the unfair burden the Protocol places on developed countries, the United States rejected the Kyoto Protocol and is not bound by its limitations.

In December 2007, the United Nations held a two-week conference in Bali. The Conference brought together more than 10,000 participants, including representatives of over 180 countries together with observers from intergovernmental and nongovernmental organizations and the media. The conference culminated in the adoption of the Bali Roadmap, which charts the course for a new negotiating process to be concluded by 2009 that will ultimately lead to a post-2012 international agreement on climate change. The Bali Roadmap identifies four major topics as crucial to a successful outcome – mitigation, adaptation, technology, and finance. Given that the Kyoto Protocol will expire in 2012, the Bali Roadmap is intended to provide a means to create a post-Protocol agreement with the goal of reducing emissions.

In July 2008, the G8 Hokkaido Toyako Summit took place in Japan. At the Summit, the G8 Hokkaido Toyako Summit Leaders Declaration was issued, stating:

We reconfirm the significance of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) as providing the most comprehensive assessment of the science and encourage the continuation of the science-based approach that should guide our climate protection efforts. We reaffirm our commitment to take strong leadership in combating climate change and in this respect,

¹⁰ Richard O. Faulk and John S. Gray, *Stormy Weather Ahead: The Legal Environment of Global Climate Change*, available at: http://works.bepress.com/richard_faulk/2/, p. 42-45 (2007).

¹¹ *Id.* at 46.

welcome decisions taken in Bali as the foundation for reaching a global agreement in the United Nations Framework Convention on Climate Change (UNFCCC) process by 2009. We are committed to its successful conclusion. Enhanced commitments or actions by all major economies are essential for tackling climate change. Therefore, we endorse the positive contribution of the Major Economies Leaders Meeting to the UNFCCC.

The Declaration reveals that at an international level, the fundamentals of the Kyoto Protocol continue to be key components in the pursuit to lower GHG emissions.

3. Current State and Voluntary Regulatory Schemes

Although there is currently no federally-mandated program to reduce GHG emissions, some states have created their own schemes. California is leading the way on climate change regulation and programs. In 2006, Governor Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006, into effect. The bill requires the California Air Resources Board (CARB) to develop regulations and market mechanisms that will ultimately reduce California's greenhouse gas emissions by 25 percent by 2020. Mandatory caps will begin in 2012 for significant sources and ratchet down to meet the 2020 goals.

On January 2, 2008, California sued the Environmental Protection Agency after the EPA rejected the state's request for a waiver of the Clean Air Act so that it could set its own GHG emissions standard for motor vehicles.¹² The new standard would have required a 30 percent reduction by 2016. EPA Administrator Stephen Johnson rejected the plan, stating that energy legislation signed by President Bush was a more effective approach to reducing GHGs than "a patchwork of state legislations." This was the first time the EPA had denied California a waiver under the Clean Air Act. California's suit has now been joined by Oregon, Washington, Arizona, New Mexico, New York, Massachusetts, Connecticut, Delaware, Illinois, Maine, Maryland, New Jersey, Pennsylvania, Rhode Island, and Vermont.¹³

Other states are coming together to form emissions trading schemes. One such scheme is the Regional Greenhouse Gas Initiative ("RGGI"), a cooperative by nine Northeast and Mid-Atlantic states to discuss the design of a regional cap-and-trade program to cover carbon dioxide emissions from power plants in the region.¹⁴ Currently in the development stage, RGGI may be expanded to regulate other GHGs from other

¹² *California v. EPA*, No. 3:08-CV-00735-SC (N.D. Cal. Filed Jan. 31, 2008).

¹³ *California sues EPA over greenhouse gases*, CNNMoney.com, available at: http://money.cnn.com/2008/01/02/news/california_greenhouse.ap/index.htm?postversion=2008010215 (Jan. 2 2008).

¹⁴ *About RGGI*, available at: <http://www.rggi.org/about.htm>.

sources. Although automobile emissions regulations are preempted by the Clean Air Act, regulation of stationary sources is not preempted.¹⁵

In addition to the development by some states of multi-state cap and trade programs, some companies are coming together voluntarily to join cap and trade systems. The Chicago Climate Exchange is the world's first and North America's only active, voluntary, legally binding, integrated trading system to reduce emissions of six GHGs.¹⁶ Exchange members make a legally binding commitment to reduce their emissions 1% every year. If they are unable to reduce their emissions, they commit to purchasing credits from other members of the exchange. Members buy and sell credits on the exchange just as you would buy and sell stock on a stock exchange. Members are not just large carbon emitters such as refineries and automobile manufacturers, but also other companies who want to reduce their carbon footprint. For example, Swiss Re recently joined the Exchange.

4. Federal Regulations on the Horizon

Currently, the United States has no federal statutory or regulatory GHG reduction requirement. However both "command and control" regulations and "market-based" techniques have been proposed. Command and control regulations set a limit on the amount of GHGs a company can release and then tax or fine companies that exceed that limit. Market-based programs rely on trading schemes such as those found in the Kyoto Protocol or in the U.S.'s Acid Rain Program that provide a certain number of credits to each company and then allow companies to buy and sell credits depending on how successful their GHG reduction initiatives have been.

Congress has yet to pass legislation regarding the regulation of GHGs. However, several bills have been proposed both in the House and the Senate. In October 2007, Senators Joe Lieberman from Connecticut and John Warner from Virginia introduced their Climate Security Act to the Senate. In December, the Act cleared the Senate Environment and Public Works Committee. The bill covers greenhouse gas sources that account for 80 percent of US emissions. Those producers would be required to cut emissions by 70% by 2050, leading to an overall cut in US emissions of 63 percent below 1990 levels. The cap would begin in 2010.

In July 2008, over a year after the Supreme Court ordered the Environmental Protection Agency ("EPA") to take action to regulate GHG emissions or make a finding that GHGs do not contribute to climate change, the EPA announced that it would not take any actions to regulate GHGs during the remainder of the Bush administration.¹⁷

¹⁵ Faulk and Gray.

¹⁶ See Overview of Chicago Climate Exchange, available at: <http://www.chicagoclimateexchange.com/content.jsf?id=821>.

¹⁷ In *Massachusetts v. EPA*, 549 U.S. 497 (2007), environmental groups sued the EPA after the EPA denied a petition to begin regulating GHGs emitted by motor vehicles. The environmental groups, joined by 12 states and 3 cities, sought review of the EPA's denial by the D.C. Circuit Court of Appeals. After the appellate court denied the Plaintiffs' petition, the Plaintiffs sought review by the Supreme Court. Among the Supreme Court's findings were: 1) Massachusetts had standing to petition the court for review of the EPA's denial; 2) GHGs are "air pollutants"; 3) the Clean Air Act authorizes

However, both the Democratic and Republican presidential nominees have committed to backing climate change regulation if they are elected. Accordingly, although the specific form is not yet clear, federal regulation is on the horizon.

III. Climate Change Impact on the Property Insurance Industry

The organizational structure of a property insurance policy provides a convenient framework for considering the potential impact climate change will have on this line of business. As respects direct damage, a typical property policy addresses the geographic location of covered property, the type of property covered, the perils or risks of loss that are insured against, and the measure of loss to damaged property. If time element coverages such as business interruption or extra expense coverage are insured, parallel issues must be considered in order to determine whether the coverage has been triggered, for what period of time, and the measure of recoverable time element loss. There are also general terms, conditions and limitations such as deductibles and limits of liability that may come into play.

A. Geographic Location

Climate change has the potential to increase property losses and related business interruption losses dramatically by causing more frequent and more severe damage from hurricanes, typhoons, floods, fires and other climate-related events.¹⁸ Geography is a critical component when considering the impact of climate change on a particular insured risk.

For example, scientists have linked climate change to increased flooding in particular geographic areas. Global average sea level has risen since 1961 at an average rate of 1.8 mm/yr and since 1993 at 3.1mm/yr. And experts suggest that the sea level has risen worldwide approximately 6-8 inches during the last 100 years.¹⁹

Rising sea levels are likely to increase flooding and erosion along coastal areas, including areas that up until now have not experienced floods. The most vulnerable areas in the United States are the Southeast and mid-Atlantic coasts. Also at risk are low-lying areas and bays such as New Orleans, North Carolina's outer banks, the Florida coasts and much of southern California.²⁰

The Greenland Ice Sheet has been shown to be losing ice twice as fast as scientists had originally estimated. If this ice sheet completely melts, it could raise global sea levels by almost 20 feet within a few hundred years, permanently flooding virtually

the EPA to regulate GHG emissions; and 4) the EPA can avoid taking regulatory action with respect to GHGs, only if it determines that GHGs do not contribute to climate change.

¹⁸ *Risk Alert: Climate Change: Business Risk and Solutions*, Marsh Climate Change, vol. V, iss. 2, April 2006.

¹⁹ *Id.*

²⁰ *Climate Change 101: the Science and Impacts.*

all of America's major coastal cities.²¹ While the long-term impacts are difficult to predict with certainty, a short term rise in sea-levels of just a few inches would have significant and far-reaching effects, particularly in coastal areas.

Scientists have also concluded that hurricanes are becoming more intense as a result of climate change. This is because hurricanes draw their strength from the heat in ocean surface waters. A 10% increase in wind speed is anticipated for every two degrees the temperature of the ocean increases.²² Therefore, as ocean waters grow warmer, hurricanes will become more frequent and more powerful on average. This trend is already evident in the last 35 years.²³ The ongoing growth in population and related development along coastal areas are most at risk from the winds, rain, flooding and other storm related perils associated with hurricanes.

Coastal areas are not the only areas susceptible to the effects of climate change. "Hot" areas will also see increased climate-change related property damage. While there are uncertainties regarding the rate of warming, the IPCC has projected that the average surface temperature of the Earth is likely to increase by 2 to 11.5°F by the end of the 21st century, relative to 1980-1990, with a best estimate of 3.2 to 7.2°F. The average rate of warming over each inhabited continent is very likely to be at least twice as large as that experienced during the 20th century. Warming will not be evenly distributed around the globe. Land areas will warm more than oceans, in part due to water's ability to store heat. High latitudes will warm more than low latitudes, in part due to positive feedback effects from melting ice. Most of North America, all of Africa, Europe, northern and central Asia, and most of Central and South America are likely to warm more than the global average. Projections suggest that the warming will be close to the global average in south Asia, Australia and New Zealand, and southern South America. The warming will also differ by season, with winters warming more than summers in most areas.²⁴

Warming is also bringing about reduced snowfall and rainfall, resulting in drought and creating prime conditions for increasing frequency and severity of wild fires such as those experienced in California and in Florida. Increases in temperature are also likely to lead to changes in precipitation and atmospheric moisture, although the changes will vary from region to region. Mid-latitude storm tracks are projected to shift toward the poles, with increased intensity in some areas but reduced frequency. Tropical storms and hurricanes are likely to become more intense, produce stronger peak winds, and produce increased rainfall over some areas due to warming sea surface temperatures.²⁵

Property insurers use various models for allocating capacity for catastrophe-exposed areas. Questions arise whether these models will keep pace with the changes

²¹ *Id.*

²² Walter J. Andrews, *Global Warming: How Hot Will it Get? Potential Claims and Related Coverage Issues*, Mealey's Litigation Report: Catastrophic Loss, vol. 2, p. 6, March 2007.

²³ *Id.* at p. 5.

²⁴ United States Environmental Protection Agency, *Future Temperature Change*, available at <http://epa.gov/climatechange/science/futureetc.html>.

²⁵ *Id.*

brought on by climate change. Geographic locations associated with more frequent and severe weather-related losses will become a more significant consideration as insurers decide whether to provide property coverage, and, if so, on what terms and conditions. Will today's flood zones remain a valid underwriting control for allocating flood insurance capacity? Will the current "tier" county designations used for Named Storm deductibles continue to be valid? Will insurers develop new underwriting controls for areas prone to more frequent tornadoes or wild fires?

B. Type of Property Covered

In addition to geographic considerations, the type of property being insured and its construction factor into climate change considerations for insurers.

For example, an increasing number of buildings are being built with "green" technologies – some of which are "cutting edge". "Green" building technology refers to the use of products, materials, and methods that conserve natural resources, reduce energy and/or water consumption, avoid toxic or other polluting emissions or otherwise minimize the environmental impact.²⁶

The installation of garden roofs is one example which provides a more aesthetic environment and improves cooling by moderating the urban heat island effect generally and for the building itself. Green roofs also mitigate storm water runoff which can otherwise result in flooding and increased sewer treatment demand. Other examples include the use of new building construction materials and finishes, more efficient lighting, heating, ventilation and air conditioning equipment, and the use of alternative power sources such as solar, geothermal and wind. Machinery and equipment are also being designed to be more energy efficient. Most of these changes currently are of a voluntary nature. However, as the regulatory climate evolves, it is likely that property owners may be required to make "green" improvements to existing buildings and equipment when they are remodeled or repaired or replaced following a loss. Tax credits are another tool that may be used as an incentive for making "green" improvements to property.

Many buildings constructed with green building technology are now obtaining LEED certification.²⁷ The Leadership in Energy and Environmental Design (LEED) is a third-party certification program that encourages adoption of sustainable green building and development practices. LEED provides a standard for the creation and implementation of specific green building practices. If a LEED-certified building is damaged or destroyed, in addition to repairing or replacing the building, the insured will likely seek recertification. As early generations of these technologies become obsolete or unavailable other related issues may arise.

Several other issues potentially arise with insuring "green" property. New materials, design and/or technologies may increase the cost of "green" construction. It is

²⁶ Green Building Coverage Enhancements, The Travelers Companies, Inc., Form DX T4 12 12 07 (12-07).

²⁷ Available at: www.usgbc.org/leed/.

important that the values reported for insurance purposes keep pace with the actual cost to repair or replace “green” property. If coverage is written on a replacement cost basis, most policies cover the cost to repair or replace the damaged property with property of “like, kind or quality.” If the insurance-to-value equation is wrong, an insured may find that the amount of coverage available is inadequate or a coinsurance penalty may apply. Further, query whether a damaged LEED-certified building has been repaired or replaced on a “like, kind or quality” basis if it has not been re-certified. From an insurer’s perspective, if coverage is not subject to a limit of liability or coinsurance and the total amount of insurance available is adequate to cover the entire loss, the indemnity due the insured may be far greater than originally contemplated by the underwriter.

Although federal regulations have yet to be enacted, some state and local governments are already taking actions in an attempt to curb the emissions of GHGs. Municipalities around the country are working to incorporate green-building concepts into their building codes.²⁸

As regulations are implemented requiring greener technology, insurers must determine whether they will provide coverage for the increased cost of implementing such technology after their insured suffers a property loss. Many policies contain exclusions for the increase of loss occasioned by the enforcement of any law, ordinance, regulation or rule regulating or restricting the construction, installation, repair, replacement, demolition, occupancy, operation or other use of property. If damaged property must be replaced with “green” property or materials because of a code requirement, coverage may not avail and the insured may have a significant uninsured loss. It is also conceivable that replacement of damaged property may not be permitted in geographic areas subject to repeated losses such as coastal flooding or erosion. Partial losses in such areas may become constructive total losses if the undamaged property must be demolished.

Demolition and Increased Cost of Construction or Law and Ordinance Coverage may be available, but the potential risk and scope of loss need to be fully understood and values which accurately reflect the exposure being insured should be obtained in order to assure the risk transfer equation is fair.

C. Perils Insured Against

The perils insured against are another important consideration with respect to the impact of climate change on property insurance. Specifically, the language used in certain coverage grants and exclusions will be implicated when assessing climate-change risks.

1. Flood and Water Exclusions

Today, many policies contain a flood and/or water damage exclusion. A common exclusion states:

²⁸ Sally Longroy, *Green Building Codes Become More Prevalent, Stringent*, TEX. LAWYER (Aug. 8, 2008).

We do not insure for loss caused directly or indirectly by any of the following. Such loss is excluded regardless of any other cause or event contributing concurrently or in any sequence to the loss.

* * *

Water Damage, meaning:

* * *

Flood, surface water, waves, tidal water overflow of a body or water, or spray from any of these, whether or not driven by wind...²⁹

In the aftermath of Hurricanes Katrina and Rita, insureds argued that many policies which excluded “flood” actually provided coverage for their losses. Policyholders argued that their damage was not the result of “flood” but rather “storm surge” or “wind”, or in the case of New Orleans, negligent construction of the levees. Although most courts have eventually rejected these arguments, it was only after costly litigation.³⁰ As climate change increases flooding in certain areas, policyholders facing such losses will continue to develop creative arguments for coverage. Accordingly, insurers should be aware of their policy language with regard to flood and whether such language adequately reflects the parties’ insuring intent.

2. Mold Exclusions

Similarly, when considering the climate-change risks that accompany warmer and wetter weather, insurers should be aware of policy language excluding “mold”. Some mold exclusions contain little more than the words “excluding loss or damage caused by...mold” while other forms include anti-concurrent causation language.³¹ The law on issues of excluded causes of loss varies by jurisdiction and is heavily influenced by the actual policy language used in the exclusion. Some courts, employing the efficient proximate cause doctrine have held that if the most important cause of the loss is covered,

²⁹ *In re Katrina Canal Breaches Litigation*, 495 F.3d 191 (5th Cir. 2007).

³⁰ See e.g., *Sher v. Lafayette Ins. Co.*, Nos. 07-C-2441, 07-C-2443, 2008 WL 928486 (La. April 8, 2008) (holding that water that flowed through levees broken by Hurricane Katrina was “flood” within the meaning of the flood exclusion and that the meaning of “flood” did not depend on whether the event is a natural disaster or a man-made one); *Bilbe v. Belsom*, 530 F.3d 314 (5th Cir. 2008) (interpreting Louisiana law and holding that the term “flood” in a flood exclusion includes storm surges); *In re Katrina Canal Breaches Litigation*, 495 F.3d 191 (holding that various flood exclusions precluded coverage for losses caused by flooding due to breached levees, regardless of whether levees were breached because they were negligently designed, constructed or maintained); *Tuepker v. State Farm Fire & Cas. Co.*, 507 F.3d 346 (5th Cir. 2007) (interpreting Mississippi law and holding that a policy’s water damage exclusion was not rendered ambiguous and unenforceable by the policy’s express coverage for wind damage or by the policy’s hurricane deductible endorsement).

³¹ For example: *This policy does not insure against loss or damage caused by any of the following, regardless of any other cause or event contributing concurrently or in any other sequence to the loss or damage.*

then the claim is covered. Under this theory, if a burst frozen pipe (a covered peril) was the dominant cause of the damage to the insured's home, rather than the mold which developed after the pipe burst (an excluded peril), the damage was covered.³² Other courts have taken the position that mold (an excluded peril) resulting from water damage (a covered peril) is not covered.³³

Although mold disputes have become less frequent over the last few years, temperature and humidity changes brought about by climate-change may result in another influx of mold-related losses and claims.

3. Wear and Tear Exclusions

Another common policy exclusion states:

We do not cover loss caused by:

- (1) wear and tear, deterioration or loss caused by any quality in property that causes it to damage or destroy itself.

* * *

These exclusions prevent recovery for damages caused by a gradual deterioration of property over time. However, hotter, windier, wetter weather can accelerate the processes of deterioration and reduce the life-span of a building or other property. Even if a policy excludes these types of damages, as climate-change related weather takes its toll, buildings may become more susceptible to damage from covered perils or ensuing or resulting loss.

4. Faulty Workmanship, Material, Construction & Design Exclusions

Property insurance policies are not intended to guarantee the quality of the material, design, construction or workmanship that go into the property that is insured. A typical exclusion that addresses this risk provides:

This policy does not insure against the following types of loss or damage:

2. the cost of correcting or making good:
 - a. faulty workmanship, material, construction or design; or
 - b. inherent or latent defect.

Losses often occur in the midst of change and building "green" involves new materials, new engineering designs, and new construction techniques. If any or all are

³² *Kelly v. Farmers Ins. Co.*, 281 F. Supp. 2d 1290 (W.D. Okla. 2003)

³³ *Fiess v. State Farm Lloyds*, 202 S.W.3d 744 (Tex. 2006).

faulty or defective, costly remedial work may be necessary and other damage may also result. For example, the structure supporting a garden roof may collapse due to inadequate design to carry the load from rainfall that occurs, or the roof water barrier may not be properly installed so that interior water damage results. Is the repair of the collapsed roof or water damage part of the excluded cost of making good the faulty design or workmanship or is it an insured loss, in whole or part? The language of this exclusion varies. Some exclusions approach the issue in terms of causation; others, like the one above, in terms of the result. The law construing both forms of exclusion varies by jurisdiction. Therefore, losses need to be carefully investigated and analyzed in light of the actual exclusion and law of the applicable jurisdiction.

5. Time Element Coverages

Many property policies also include coverage for business interruption or other time element losses. A common coverage grant states:

This policy insures against loss resulting directly from the necessary interruption of business caused by physical damage to real or personal property insured under this policy, by perils insured against, during the term of this policy.

* * *

Recovery in the event of loss hereunder shall be the ACTUAL LOSS SUSTAINED by the insured resulting directly from such interruption of business, but not exceeding the reduction in gross earnings less charges and expenses which do not necessarily continue during the interruption of business, for only such length of time as would be required with the exercise of due diligence and dispatch to rebuild, repair or replace such described property as had been damaged, commencing with the date of such damage and not limited by the date of expiration of this policy.³⁴

* * *

As climate-change related weather events become more frequent and more severe with resulting direct damage to property, insurers are likely to see a corresponding rise in time element claims such as business interruption and extra expense. Time element losses arise out of damage to property of the type that is covered by a peril insured against. Therefore, the issues discussed above in connection with direct damage losses are also relevant to time element coverages. However, there are other issues that must also be considered.

³⁴ Clark Schirle, *Time Element Coverages in Business Interruption Insurance*, A.B.A. 37-FALL BRIEF 32 (2007).

Time element coverages are so named because time is a factor in determining the amount of loss. This time period is referred to as the Period of Liability or the Period of Indemnity or the Period of Restoration and it is generally determined by the length of time required to repair or replace the property that has been destroyed. New designs or technologies employed in “green” property that has been damaged or destroyed may have an impact on the length of the Period of Liability because it may take longer to obtain replacement “green” property or to reconstruct it. Further, additional time may be required to re-certify the property to LEED standards or other federal, state or local code requirements. Exclusions for increased loss due to code requirements may also apply to the amount of covered time element loss. But, like the coverage for property damage, Law & Ordinance or Demolition and Increased Costs of Construction coverage may also be available to cover the increase in loss that results from a longer Period of Liability.

Business interruption coverage typically insures the net profits that are lost and the fixed expenses a business necessarily continues to incur during the Period of Liability. Extra Expense insures the incremental expenses necessarily incurred by a business in order to continue its operations during the Period of Liability which exceed the expenses the business would have incurred had no loss occurred.

Tax credits that a business obtains as an incentive to become and operate “green” may be lost in the event of damage to its “green” facilities, thereby increasing the amount of financial loss. Under “cap and trade” systems, an interruption may result in reduced emissions thereby generating unused carbon credits which could be sold to mitigate the business interruption loss. Is an insurer entitled to take full credit for the market value of such carbon credits in calculating the compensable amount of business interruption loss?

Alternatively, damage to property that controls GHG emissions may result in an increase in emissions such that the business must purchase additional carbon credits in order to continue its operations. Such increased costs of operation might be claimed as an Expense to Reduce Loss or as an Extra Expense. Fines or penalties levied in the event of increased emissions may also be claimed as Extra Expenses. The issue of whether fines or penalties qualify as an Extra Expense may be further complicated if the policy also excludes coverage for fines and penalties. The amount of the fine or penalty may be far outweighed by the reduction in the business interruption loss by continuing to operate in violation of emissions control laws or regulations. While an insurer cannot compel an insured to violate law in order to mitigate the business interruption loss, query whether an insured has fulfilled its duty to mitigate its loss if it does not or refuses to apply for a waiver of the emissions regulations until its emissions-control property has been repaired or replaced.

6. Service Interruption

Some policies also provide time element coverage for service interruption. For example, a policy may include the following provision:

Service Interruption Time Element

- 1) This “policy” covers the Actual Loss Sustained and Extra Expense incurred by the Insured during the Period of

Service Interruption at “insured locations” when the loss is caused by the interruption of incoming services consisting of electricity, gas, fuel, steam, water, refrigeration or from the lack of outgoing sewerage service as a direct result of physical damage of the type insured by this “policy” to the facilities of the supplier or such service located within the “policy” Territory, that immediately prevents in whole or in part the delivery of such usable services.

* * *

Increases in temperatures as a result of global warming may adversely affect electrical distribution equipment leading to brown or black outs. Windstorm losses pose serious risk to telecommunications services which are critical to businesses dependent on communication of electronic data to conduct their operations. Heavy rains and flooding may overtax sewer capacity. Drought may reduce water available for cooling or manufacturing processes. How climate-related weather events will ultimately affect such critical services remains to be seen, but given the right circumstances, the result can be catastrophic to large geographic areas or to individual businesses.

7. Acts of Civil Authority and Ingress/Egress

Commercial insurance policies may provide coverage for “acts of civil authority that prohibit access to the described premises” or where ingress or egress to an insured’s premises is prevented as a result of damage to property not necessarily that of the insured. For example, if an insured’s business is not damaged due to a hurricane or flood or wild fire, but the entire area is closed by a government order or ingress/egress is not possible due to the event, there may be coverage for the resulting business interruption losses. These coverage provisions, which were originally intended to address rather specific and limited contingencies, may take on greater significance as climate-change induced weather events become more frequent and more severe in terms of intensity and scope.

D. Other Loss Cost Considerations

Indemnity loss costs such as those affected by geography, the type of property covered or the perils insured against highlighted above are not the only financial consequence of climate-change related losses. The adjustment expense insurers incur to investigate and analyze coverage and the amount of loss will also be impacted. Adjusters and claim managers will need to become conversant with “green” loss issues. Consultants with expertise in “green” building design and materials and new power technology applications such as wind, solar or geo-thermal will be required. Accounting expertise to assist with evolving types of financial losses that may be claimed under Time Element coverages will be needed. And, coverage analyses may involve greater reliance on legal counsel. All of these factors bear on the expense that may be incurred to assist with a proper determination of liability and the amount of loss. Failure to use the proper resources may result in increased leakage in indemnity loss costs.

E. How Can Insurers Prepare?

Although climate-change related claims and losses will present additional exposures for property insurers and novel coverage questions, it will also present new opportunities and challenges from a business perspective. In order to prepare for and take advantage of those opportunities, insurers should consider the following guidelines.

1. Insurers should update their catastrophe models.

After Hurricanes Katrina and Rita, a number of insurers cancelled or refused to renew policies in many Gulf Coast states. This was in response to claims that completely wiped out all of the profits generated over the last 50 to 75 years.³⁵ Some insurers completely withdrew from those hurricane subject areas, while others scaled back the number of policies they issued to just a fraction of their pre-hurricane writings.

While many commentators have suggested that home-owner insurers have left particularly risky markets due to price regulation coupled with increased claims, commercial insurance markets which are not similarly regulated have also experienced this phenomenon.³⁶ However, as some insurers leave particular markets, other insurers have viewed the reduction in competition as an opportunity to grow their business. Insurers that are able to more accurately project and control their catastrophe exposures may find entry into these markets lucrative. Efficient and reliable loss projections based on climate change-related weather patterns will be key to developing business in these risky markets.

The property insurance industry has always depended on catastrophe modeling to assess potential risks and allocate capacity. However, the catastrophe models that the industry has traditionally relied on are based on a historical perspective and may not adequately take into account evolving climate change risks.

Some insurers and others such as brokers, recognizing the possible inadequacy of current catastrophe models, are participating in partnerships focused specifically on developing new climate-change modeling. For example, the Insurance Australia Group has partnered with the University of Oklahoma to develop high-resolution climate modeling, while Willis is collaborating with researchers in the United Kingdom and Japan to develop its own climate modeling.³⁷

Development of more reliable and accurate climate risk assessment models will be critical to properly assessing and underwriting the increased exposures.

³⁵ Evan Mills, *Ceres Report: From Risk to Opportunity: 2007: Insurer Responses to Climate Change*, October 2007, p. 7.

³⁶ *Id.*

³⁷ *Id.* p. 11.

2. Insurers should review key coverage provisions and exclusions.

As with any coverage issue, the specific language used in coverage grants and exclusions is critical. Policy language should be considered in light of potential climate change exposures to ensure that it is consistent with underwriting intent. In particular, flood exclusions, mold or water damage exclusions, faulty workmanship, material construction and design exclusions, code coverages and time element coverages should be reviewed.

3. Insurers should educate underwriting, loss control, and claims personnel about climate-change issues.

Climate change will likely present some novel issues for the property insurance industry. Underwriters and loss control personnel need to be sensitive to the increased risks and exposures, particularly in high-hazard areas. Claims personnel, independent adjusters, accountants, and other consultants who are involved in the adjustment of a claim need to be aware and consider these issues, including increased use of “green” building technologies and materials, LEED or other recognized certification procedures, regulatory or code issues, and the possible time element losses that may result under GHG/carbon credit regulation.

4. Insurers should consider new opportunities created by climate change and related regulation.

Climate change, and the increasing focus on alternative energy production in general, present opportunities for the development of new types of insurance products.

a. Mitigation and Renewable Energy Project Insurance

Under most carbon trading schemes, one way a carbon emitter can acquire carbon credits is to participate in carbon mitigation projects including renewable energy projects. Carbon mitigation/renewable energy projects are already under construction and other projects are being developed.

AXA, for example, has already developed a comprehensive insurance program for wind farms;³⁸ Munich Re has successfully piloted exploration risk insurance for geothermal energy companies. As additional renewable energy projects and products are available, these types of projects will require innovative types of insurance.

b. Green Building Insurance

Travelers Insurance has developed an endorsement entitled “Green Building Coverage Enhancements.” The endorsement defines green as “products, materials, methods and processes that conserve natural resources, reduce energy or water consumption, avoid toxic or other polluting emissions, or otherwise minimize the environmental impact.” The endorsement provides, in part, that:

³⁸ *Id.*

If direct physical loss or damage by a covered cause of loss occurs to a covered building, we will pay for (a) the reasonable additional costs you incur to repair or replace the lost or damaged portions of the building using products or materials that:

- (i) Are “green” alternatives to the products or materials of the lost or damaged property in accordance with the document standards of a “Green Authority”; and
- (ii) Are otherwise of comparable quality and function to the damaged property.

* * *

The endorsement also covers the expense of having a “green” building reengineered or recertified to meet with “Green Authority” standards. Additionally, the endorsement provides for an increased period of restoration if it is required to rebuild the building with green technology.

c. Insurance for Carbon Capture Projects

One of the newer technologies that is currently being developed is the ability to capture carbon that the carbon producers emit. Through carbon capture, carbon released from a power plant or other carbon emitter is captured and then stored in underground rock formations. This prevents the carbon from being released into the atmosphere and contributing to climate change.

One issue associated with these projects is their long-term viability. If stored carbon is released from one of these large holding facilities, for example, it could have catastrophic local effects. Assessing and insuring against these risks will present unique challenges for both property and liability insurers.

d. Loss Prevention/Mitigation Services

Some insurers are viewing assessment and mitigation of climate change risks as a way to differentiate themselves in a competitive market. Instead of simply responding to climate change by pulling out of markets, groups such as the Association of British Insurers and CEA have called on insurers to actively pursue climate change solutions to preserve the private insurance market.³⁹ This begins with understanding the implications of climate change. Of 190 insurance companies examined in 2007, 1 in 10 were working to understand the mechanics and implications of climate change.⁴⁰

³⁹ *Id.*

⁴⁰ *Id.*

Insurers also can play a role in educating the public and participating in the development of climate change projects. Some insurers have joined the ClimateWise program to promote policy and market agenda for responses to climate change risks.⁴¹ Other insurers have joined the U.S. Climate Action Partnership, which calls on the United States to establish mandatory targets to reduce greenhouse gas emissions 60-80% over the next several decades. And other insurers have undertaken significant efforts to reduce and/or mitigate their own carbon footprint. These types of activities are beneficial to insurers on several levels. They certainly promote the industry as climate conscious and provide good public relations for insurers engaged in such programs. But perhaps more importantly, by actively leading and encouraging communities to reduce their carbon emissions, insurers can help mitigate the effects of climate change and related property damage that is central to their risk management business.

IV. Conclusion

Although climate change will likely increase certain risks and raise new questions for the property insurance industry, it will also present new opportunities. In order to prepare for these challenges and opportunities, insurers will have to do their homework, beginning with basic considerations of the facilities insured, the perils insured against, policy language, and training. By considering these issues now, insurers will be poised to assess risks and to position themselves appropriately for new opportunities created by climate change and related regulations.

⁴¹ *Id.* p. 35.