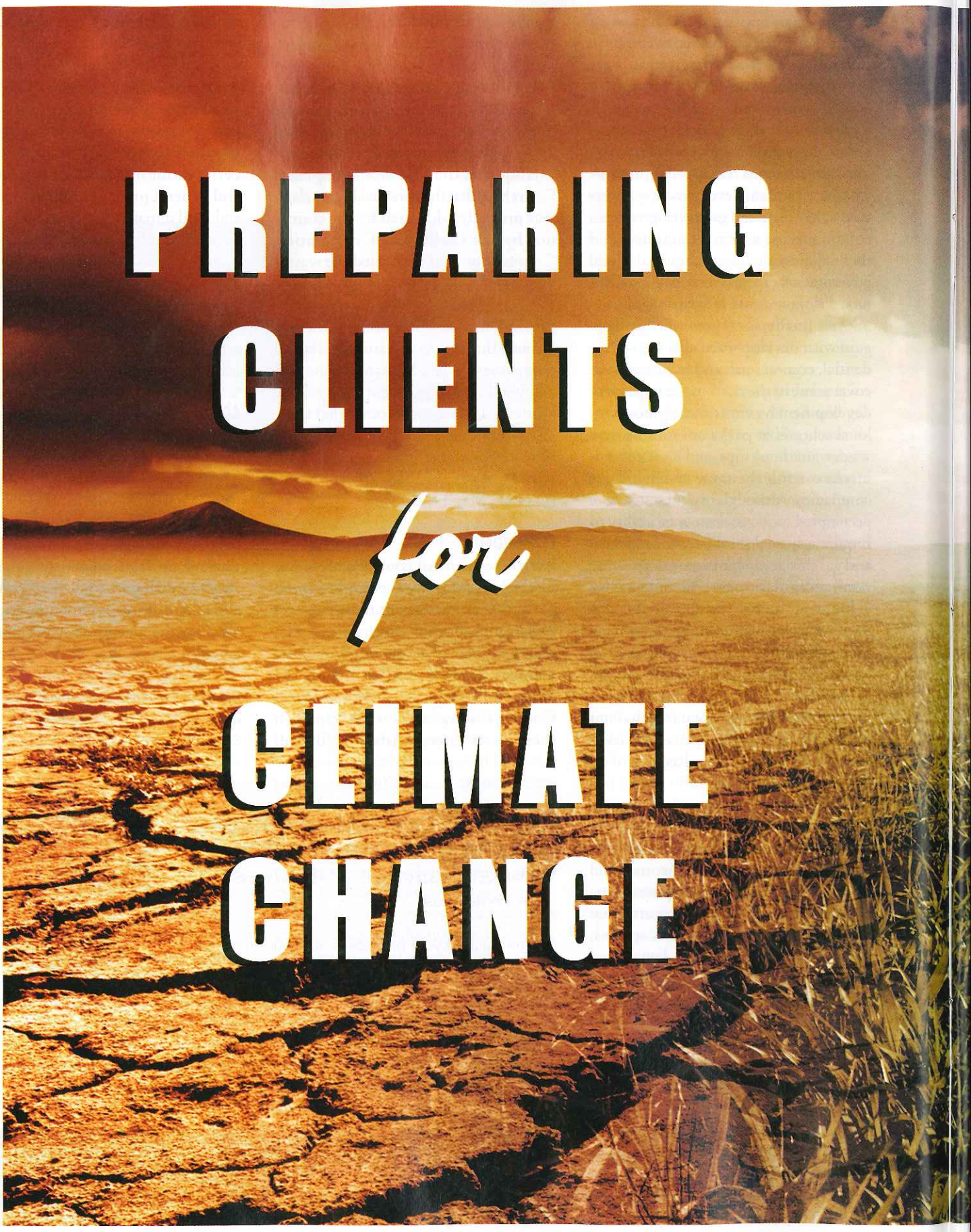
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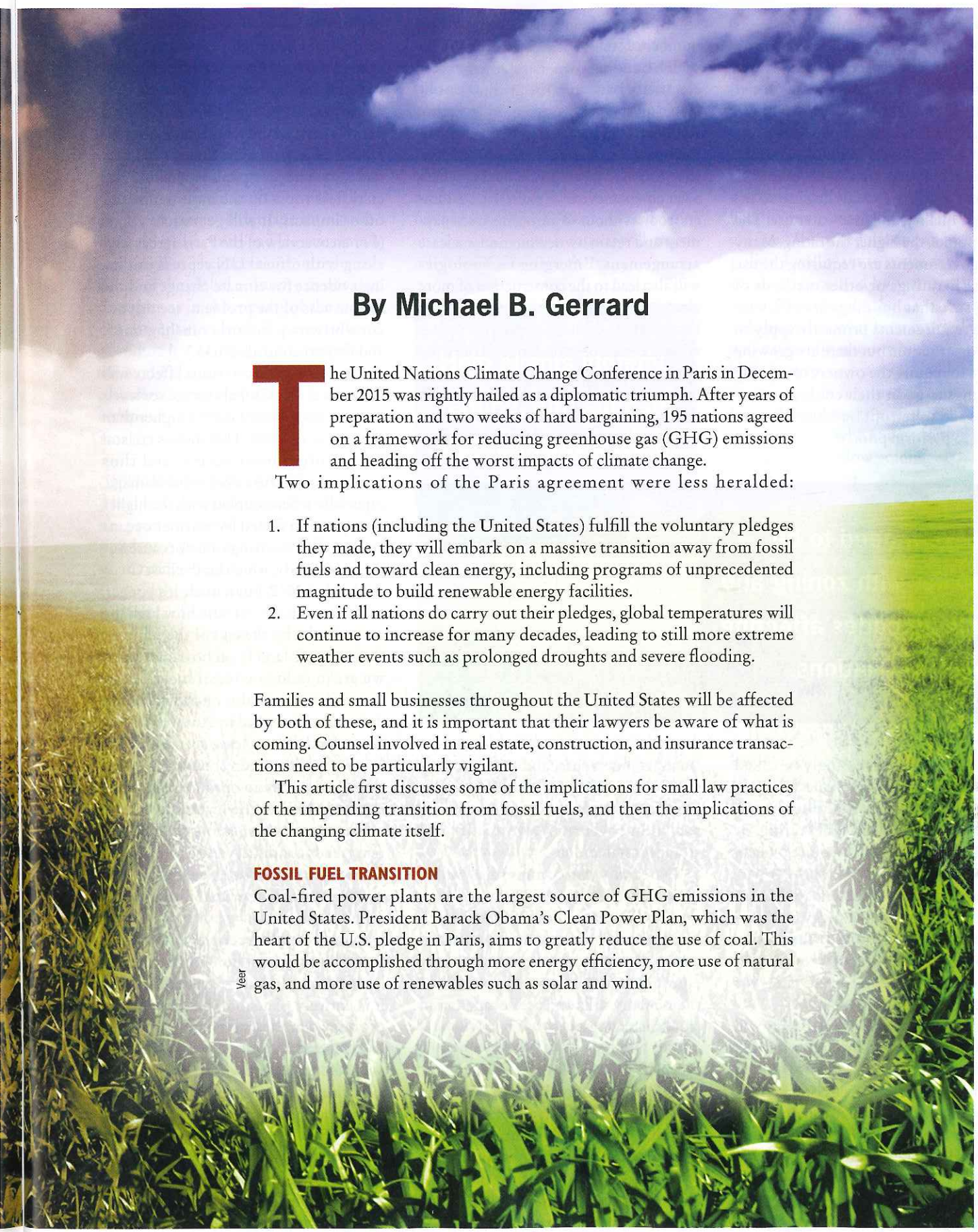

By Michael B. Gerrard

The United Nations Climate Change Conference in Paris in December 2015 was rightly hailed as a diplomatic triumph. After years of preparation and two weeks of hard bargaining, 195 nations agreed on a framework for reducing greenhouse gas (GHG) emissions and heading off the worst impacts of climate change.

Two implications of the Paris agreement were less heralded:

1. If nations (including the United States) fulfill the voluntary pledges they made, they will embark on a massive transition away from fossil fuels and toward clean energy, including programs of unprecedented magnitude to build renewable energy facilities.
2. Even if all nations do carry out their pledges, global temperatures will continue to increase for many decades, leading to still more extreme weather events such as prolonged droughts and severe flooding.

Families and small businesses throughout the United States will be affected by both of these, and it is important that their lawyers be aware of what is coming. Counsel involved in real estate, construction, and insurance transactions need to be particularly vigilant.

This article first discusses some of the implications for small law practices of the impending transition from fossil fuels, and then the implications of the changing climate itself.

FOSSIL FUEL TRANSITION

Coal-fired power plants are the largest source of GHG emissions in the United States. President Barack Obama's Clean Power Plan, which was the heart of the U.S. pledge in Paris, aims to greatly reduce the use of coal. This would be accomplished through more energy efficiency, more use of natural gas, and more use of renewables such as solar and wind.

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Buildings are high on the list of targets for improved energy efficiency. In many cities, the market expects large new office buildings to have a good rating under the LEED system—the Leadership in Energy and Environmental Design system of the U.S. Green Building Council. Buildings collect points for such items as efficient lighting and cooling, good indoor air quality, and low water use. The more points, the higher the rating. Many local governments are requiring the use of LEED ratings or other methods of being sure that buildings are efficient. These requirements primarily apply to new construction, but there are growing efforts to require the owners of existing buildings to audit their energy performance and to retrofit buildings that are found to perform poorly.

Lawyers need to be familiar with zoning and building codes affecting solar installations.

Lawyers will increasingly be asked to insert clauses in construction contracts providing that buildings be eligible for a particular LEED rating, or provisions in leases that require owners to have certain "green" features or performance. Energy-efficient appliances (such as those with an "Energy Star" rating) may also be required. Tax credits and other financial incentives are also provided by some states and cities for efficiency features.

Most of the new renewable energy will probably be supplied by large wind and solar farms, sometimes leading to conflicts with neighbors. But we will also see a very large number of installations of solar panels on the rooftops of residential and commercial buildings. Several factors will drive this trend: the five-year extension of federal tax credits adopted by Congress in late 2015; the rapidly falling price of solar photovoltaic cells; the increasing number of states with "net metering" (in which building owners sell their excess electricity back into the grid); the policies in most of the states requiring electric utilities to obtain a certain percentage of their power from renewable sources; and the growth of a business model in which solar companies install panels on customers' roofs without requiring up-front payment and retain ownership under a lease arrangement. Emerging technologies will also lead to the construction of more electricity storage units (essentially, large batteries) in buildings to provide power when the sun does not shine and the wind does not blow.

Lawyers will need to be familiar with the operation of the tax credits and the net metering laws, with the solar panel lease arrangements, and with the way that local zoning and building codes (and, in some places, home owners association covenants) affect solar and storage installations.

Especially for commercial buildings, we are likely to see growth of energy service companies (ESCOs), which help building owners identify and install energy efficiency and renewable energy equipment and other ways to reduce their energy bills and are compensated from the savings.

CLIMATE CHANGE PROJECTIONS

Even with vigorous efforts to transition away from fossil fuels, there is no question that coal, oil, and natural gas will continue to be burned for many decades to come, and that means that the planet will continue to get warmer. The Paris conference set maximum tolerable levels of global warming, but all the voluntary pledges add up to temperatures that are considerably higher. With the limited warming that has occurred to date, we are already seeing serious consequences. In various parts of the world (including the United States), there are longer droughts, more extreme precipitation, melting glaciers, less snow on the mountains, and other impacts. It will get much worse. (For an overview of the Paris agreement, along with official UN reports outlining evidence for climate change and the seriousness of the problem, see tinyurl.com/htfwnvq, tinyurl.com/h5g6m65, and tinyurl.com/nks2m33.)

One of the most serious effects will be sea level rise. Global average sea levels are now about eight inches higher than they were in 1900. This makes coastal storm surges more severe, and thus major storms cause even more damage, especially when coupled with the higher precipitation fueled by warmer oceans and air. Climate change did not cause Superstorm Sandy, which hit the East Coast in October 2012, but it made it stronger.

No one knows for sure how high the seas will rise by the end of the century; that depends largely on how successful we are in reducing fossil fuel use and deforestation and also on the uncertain dynamics of the ice in Antarctica and Greenland. A best-case scenario, with success worldwide in controlling emissions, gives us about one foot of sea level rise in 2100 over the levels of 2000. If efforts to control emissions fail and current trends continue, we are probably in the two- to four-foot range, but there is about a 10 percent probability of a six-foot increase.

Nearly 5 million people in the United States live in 2.5 million homes that are less than four feet above high tide. Thus it is entirely plausible that 2.5 million of today's homes will be in the water in 2100, and possibly many more. And well before 2100 we will see creeping sea level rise and increasingly severe coastal storms, with many homes washed away. Exactly how many, where, and when, no one can say.

Sea level rise is not the only effect of climate change. California's current drought, whether or not it was worsened

by climate change, demonstrates how many sectors of the economy can be deeply hurt by the sort of condition that will become more common in the decades to come. Agriculture is especially vulnerable to water shortages; and even if water is available, extreme heat will wither crops, kill livestock, and make outdoor work difficult or impossible. Severe storms will damage infrastructure and make travel and logistics much less reliable. The increasing interdependence of the global economy means that disruptions in other parts of the world can disrupt supply chains everywhere. Flooding in Thailand in 2011 inundated the world's largest hard-disk drive manufacturers, impairing production lines for computers and other devices around the world; this is but a foretaste.

IMPLICATIONS FOR LAWYERS

All of this poses profound difficulties for the practice of real estate and construction law. As lawyers we are accustomed to advising clients about the risks they face and the precautions they should take in the face of uncertainty. Climate change poses both risks and uncertainties that are greater than most of us usually deal with. The time frames are also longer; though some losses will occur in the near future, the worst effects will come after today's clients are gone, though their grandchildren may be around.

If you represent banks that are giving 20-year mortgages or insurance companies that are writing one-year policies, these risks might not be taken very seriously. It could be a different story if your client is a family that wants to pass its wealth to the generations to come, or a business that is contemplating a 99-year lease, or a hospital or university that is considering building or expanding a campus.

Real estate markets have been slow to react. People are rebuilding areas in New Orleans and New York that were devastated by Hurricane Katrina and Superstorm Sandy and remain vulnerable to the next huge storm. (Lightning may not strike twice in the same place, but hurricanes certainly do.) There is still a thriving market for property in parts of south Florida that projections say have at best a few decades before they are underwater. But as devastating events continue or accelerate, and as the science attributing the magnitude of these events to climate change becomes even more difficult to dispute, rational real estate companies and their investors, lenders, and insurers will be less interested in low-lying coastal areas and will be looking for more inland or upland properties. The increased desirability of those safer locations will in turn affect values and uses there.

Help clients identify, reduce, and allocate the risks associated with climate change.

In this world of change and uncertainty, lawyers can help their clients identify, reduce, and allocate risks.

In handling real estate transactions, it is important to think through what could happen, how the risks can be reduced, and whether the remaining risk is acceptable. This is straightforward enough if the deal involves the purchase or construction of a beach house—with the help of appropriate professionals, one can determine the odds and timing of severe flooding, the ways to make the house more resilient to flooding (such as elevating the structure or at least its essential equipment, changing the location, or building a sea wall), and how long the house needs to survive in order for it to be a sound investment. It is more difficult in considering an investment (such as a bundle of mortgages or a real estate investment trust) that is built on a large number of unseen properties.

The allocation of risks can better be performed once the nature and magnitude of the risks are understood. For example, if I am hiring an architect to design a building for me, what size storm should it be able to withstand? (It's not enough to rely on the local building codes; few have caught up with climate risks.) Perhaps I should negotiate that with the architect—she'll warrant that the building will stand up to what is now considered a 50-year storm, or one foot of sea level rise, or whatever. (And if I'm representing an architect instead, I'll want a clause saying building code compliance is enough and disclaiming liability for events worsened by climate change.) If I'm negotiating an insurance policy, I will want to make sure it covers damage caused by water as well as wind. (After Sandy, there was considerable litigation over how much damage was caused by wind, which was generally covered, or by water, which often wasn't.) If I'm negotiating a long-term lease, I will want to specify what sorts of conditions (such as destruction of the property) will allow voiding of the obligation to pay rent.

Several publicly available sources will help make initial assessments of the risk from climate change. A federal interagency program has created and periodically updates the National Climate Assessment (nca2014.globalchange.gov), which has regional projections under various scenarios. A nonprofit group called Climate Central (climatecentral.org) is producing increasingly detailed maps (sealevel.climatecentral.org) about vulnerability to sea level rise. These and other sources are readily available online. Note, however, that Federal Emergency Management Agency (FEMA) flood maps are not especially helpful in this regard; FEMA is working on reflecting future sea level rise in its mapping, but so far the maps are based only on past events.

This article has only touched on some of the likely effects of climate change, and the science to develop more confident projections is rapidly developing. But it has aimed to demonstrate that our clients will face both perils and opportunities, and it is our job to help them anticipate and prepare for them. ■

Michael B. Gerrard (michael.gerrard@law.columbia.edu) is a professor and director of the Sabin Center for Climate Change Law at Columbia Law School and is senior counsel to Arnold & Porter. He was the 2004–2005 chair of the ABA Section of Environment, Energy, and Resources.