The PRACTICAL GUIDANCE Journal

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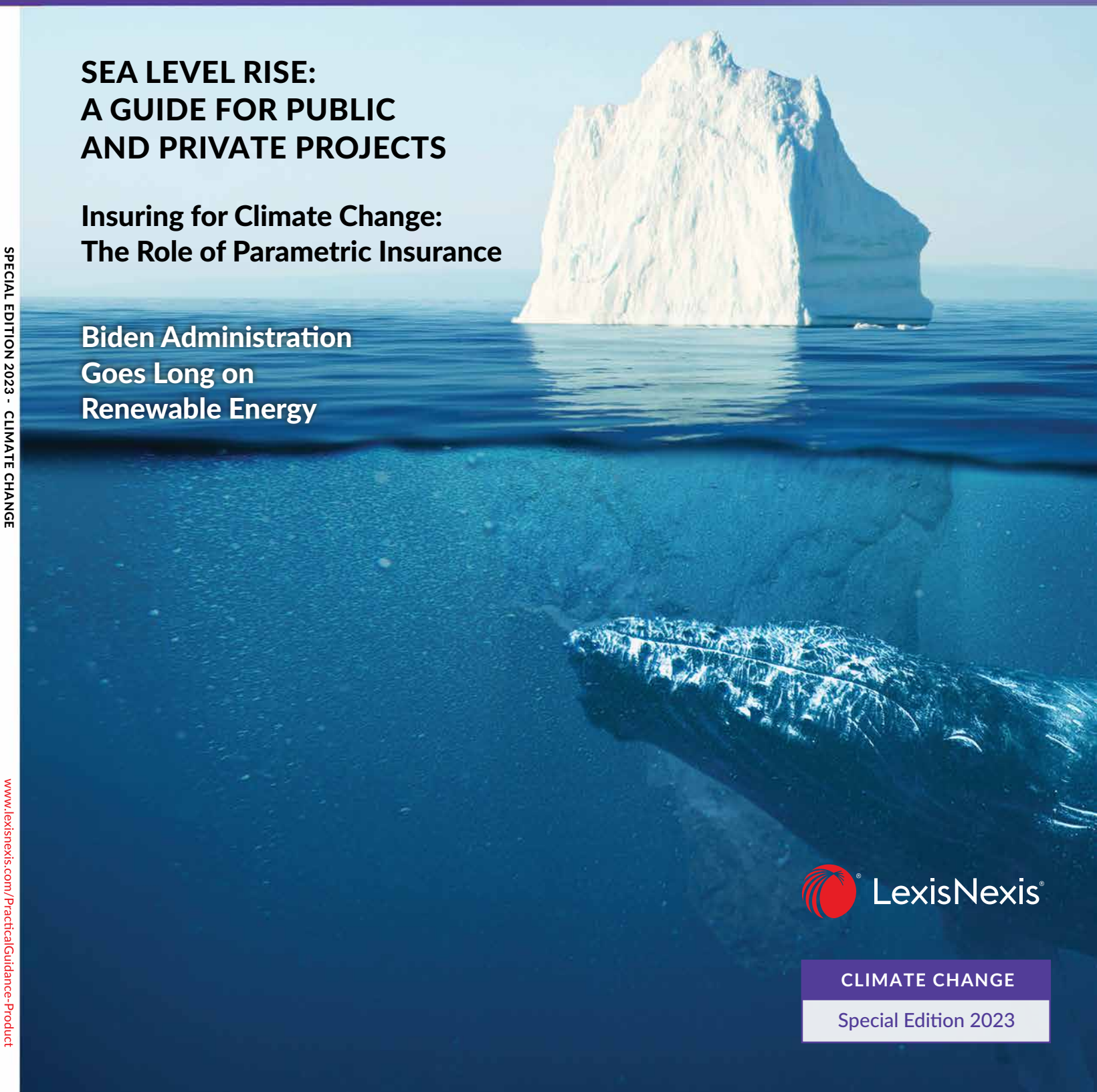
SEA LEVEL RISE: A GUIDE FOR PUBLIC AND PRIVATE PROJECTS

Insuring for Climate Change: The Role of Parametric Insurance

Biden Administration Goes Long on Renewable Energy



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CLIMATE CHANGE

Special Edition 2023

SPECIAL EDITION 2023 - CLIMATE CHANGE

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Introduction

CLIMATE CHANGE AND ITS IMPACTS on the planet, people, and environment remain at the forefront of headlines, scientific study, and government action worldwide. The United Nations cites the major concerns as hotter temperatures, more severe storms, drought, warming and rising oceans, and food supply impacts, as major increasing threats.

Legal steps toward addressing these concerns are the focus of this edition of the Practical Guidance Journal. The federal government and many states are passing laws aimed at addressing the affects of global warming and preventing further environmental damage. This edition includes the *Practical Guidance Climate Change Legislation Tracker.*

The Inflation Reduction Act (IRA) contains numerous provisions designed specifically to increase U.S. energy reliability and cleaner energy production while creating new investment opportunities and tax incentives in clean energy. More specifics are summarized in the article, *Energy Security and Climate Change Initiatives in the Inflation Reduction Act.* The Biden Administration's efforts to leap forward with energy and climate-change initiatives continue to drive headlines. Gain insights into what the IRA actually does, who will pay the hefty bill for the new initiatives, and whether the Act can meet the stated goals by reading *The Biden Administration is Going Long on Renewable Energy.*

As businesses and clients prepare for the effects of climate change, new protections emerge. Parametric insurance is designed to pay the insured upon the occurrence and strength of a specified climate-related triggering event, such as wind speed and earthquake magnitude. Get details about claims payment, coverage availability in the U.S. and abroad, and some of the pros and cons of this insurance in the article, *Insuring for Climate Change: The Role of Parametric Insurance.* In addition, sea level rise (SLR) planning and regulatory guidance for local governments and coastal property owners affects a large percentage of the population residing or working in U.S. coastal counties. Learn more about evolving SLR legal and policy framework and how it may impact your clients for decades to come by reading *Sea Level Rise: A Guide for Public and Private Projects.*

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The Practical Guidance Finance Team

Energy Security and Climate Change Initiatives in the **Inflation Reduction Act**

This article discusses the energy security and climate change initiatives included in the Inflation Reduction Act of 2022[1] (IRA) and brings together a collection of related resources that include additional guidance.

PRESIDENT JOSEPH R. BIDEN SIGNED THE IRA INTO LAW ON August 16, 2022, to address climate change, taxes, healthcare, and inflation. Among other things, the statute aims to increase American energy security through policies to support energy reliability and cleaner production along with investments in clean energy manufacturing. This article includes links to related content in Practical Guidance.

Overview of the Energy Security and Climate Change Initiatives Included in the IRA

The IRA includes $369 billion in energy security and climate change spending over the next 10 years. The energy security and climate change initiatives in the statute are discussed below.

Energy Security

The IRA invests in several energy security initiatives, including through the extension and expansion of many existing renewable energy credits and the creation of new tax credits for investments in clean energy technologies or energy production. The statute expands the existing production tax credits and investment tax credits for businesses to support investments in energy storage technologies, renewable energy sources such as solar and wind power, clean vehicles and charging stations, and fuels such as clean hydrogen.

Of particular interest in the statute is a new direct pay feature that will make it easier for owners of renewable energy projects to monetize the value of the tax credits by receiving cash payments instead of tax credits (in some cases eliminating the need to set up complicated tax equity structures). However, only certain tax-exempt entities can use the new direct-pay feature (with limited exceptions for certain types of renewable energy projects).

1. Pub. L. No. 117-169, 136 Stat. 1818 (Aug. 16, 2022).

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For a list of some key considerations for counsel when contemplating or negotiating a project finance transaction, see

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PROJECT FINANCE ADVANTAGES AND DISADVANTAGES

Specific funding amounts in the statute for energy security include:

- $30 billion in production tax credits to accelerate U.S. manufacturing of solar panels, wind turbines, batteries, and critical minerals processing
- $10 billion investment tax credit to build clean-technology manufacturing facilities
- $500 million in the Defense Production Act for heat pumps and critical minerals processing
- $2 billion in grants to retool existing auto manufacturing facilities to manufacture clean vehicles
- Up to $20 billion in loans to build new clean vehicle manufacturing facilities across the country
- $2 billion for National Labs to accelerate energy research

The Practical Guidance Energy & Utilities Team

Biden Administration Goes Long on Renewable Energy

Climate Change

The IRA contains substantial funding aimed to reduce emissions from electricity production, transportation, industrial manufacturing, buildings, and agriculture. The statute also includes several incentives for consumers such as direct consumer incentives to buy energy efficient and electric appliances, clean vehicles, and rooftop solar generation. Examples in the bill include:

- $9 billion in consumer home energy rebate programs
- 10 years of consumer tax credits to make homes energy efficient
- $4,000 consumer tax credit to buy used clean vehicles and up to $7,500 tax credit to buy new clean vehicles

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For information about concession contracts, see

GOVERNMENT CONCESSIONS: KEY ISSUES FOR PROJECT FINANCE INVESTORS, DEVELOPERS, AND LENDERS

- $1 billion grant program to make affordable housing more energy efficient
- Tax credits for clean sources of electricity and energy storage and roughly $30 billion in targeted grant and loan programs for states and electric utilities to accelerate the transition to clean electricity
- Tax credits and grants for clean fuels and clean commercial vehicles to reduce emissions from all parts of the transportation sector
- Grants and tax credits to reduce emissions from industrial manufacturing processes, including almost $6 billion for a new Advanced Industrial Facilities Deployment Program to reduce emissions from industrial emitters
- Over $9 billion for federal procurement of American-made clean technologies, including $3 billion for the U.S. Postal Service to purchase zero-emissions vehicles
- $27 billion in clean energy technology to support deployment of technologies to reduce emissions L

RESEARCH PATH: *Energy & Utilities > Energy Financing > Articles*

On January 27, 2021, President Joseph R. Biden signed Executive Order 14008,[1] calling for the country to become net zero on carbon emissions by the year 2050. This order also called for the country's electricity sector to become net zero by the year 2035. Both were tall orders calling for drastic action.

TO EFFECTUATE THESE ORDERS, THE BIDEN ADMINISTRATION needed more than unilateral executive action and regulation—both of which can be reversed by subsequent administrations. Instead, it needed solid legislation passed and funded by Congress. Enter the great climate change legislative debate of 2022. After much political wrangling and negotiation, and months and months of uncertainty, Congress eventually passed the $740 billion Inflation Reduction Act (Act), which was signed into law on August 16, 2022. The Act provides almost $400 billion in federal funding for energy and climate-change projects, with the goal for the U.S. economy to achieve a 40% reduction in carbon emissions by the year 2030.

What Does the Act Actually Do?

As with any large, expensive omnibus bill that successfully makes its way through Congress, the Act is both comprehensive and complicated. It combats climate change via a number of avenues, focusing on clean and renewable energy sources and technology to reach President Biden's climate-change goals.

One of the Act's main focuses is actually on nuclear energy—with significant tax credits available for private nuclear project developers who build advanced nuclear energy projects. The Act also seeks to create a private marketplace for the purchase and sale of high-quality, low-enriched uranium for advanced nuclear reactors (previously only supplied by the federal government). It views this as a way to break down barriers to entry and innovation in the advanced nuclear field. Notably, the Act also provides significant tax credits for clean hydrogen production—including through the use of advanced nuclear reactors—making future nuclear power projects even more promising, probable, and profitable.

The showcase feature of the Act focuses on production and incentive tax credits for the build-out of new wind, solar, and battery storage facilities throughout the United States. These tax credits—which last 10 years—provide up to 2.6 cents per kilowatt hour for wind or solar power produced by new projects and provide up to a 30% project cost reduction for new wind and solar projects that meet certain wage and workforce requirements. In real dollars, it is expected that these tax credits will equate to more than $130 billion in direct incentives for developers to build new wind, solar, and battery storage projects. These funds are crucial to help the Biden Administration reach its carbon-reduction goals, as they are designed to spur a multi-fold increase in wind, solar, and battery-storage projects over the next 10 years. Using these funds, the Biden Administration wants to see at least 50,000 new wind turbines, 750 million new industrial-scale solar panels, and 2,300 new battery storage projects built in the next 10 years.

The Act also provides increased federal Section 45Q tax incentives[2] for utility-level carbon capture programs, showing that green tech can partner with traditional energy producers to work toward net zero. These programs have been championed by members of Congress, including the all-important Senator Joe Manchin, as a way to work toward net zero through innovation rather than elimination of carbon production. Importantly for the West Virginia senator, carbon capture represents the clearest way to keep coal-fired power plants operating throughout the country, while still effectively reducing carbon emissions.

Focusing directly on consumer action, the Act also provides a multitude of tax credits for the purchase of new and used electric and hybrid vehicles, as well as for the installation of home solar and energy-efficient appliances, HVAC systems, and hot water heaters. If fully utilized, these tax credits have the ability to put thousands of dollars each year into an average consumer's pocket, spurring the economy and boosting residential green energy utilization substantially. Most importantly, the Act helps consumers get into the habit of thinking about sustainability—an important milestone if the United States is to achieve its carbon reduction goals.

Surprisingly, even the traditional oil and gas industry is given some benefits under the Act. Notably, offshore areas opened up for renewable energy production (such as for offshore wind) must now also be made available for offshore oil and gas development. While applications for offshore oil and gas drilling permits can always be denied, the Act at least provides for some mechanism to increase land available for offshore oil and gas development. While these provisions do not combat climate change directly, they likely helped ensure the Act's passage by throwing benefits to Gulf-coast states whose senators and/or representatives would otherwise have voted against the Act's passage.

Who is Paying for the Act?

Unlike many bills passed by Congress, where funding mechanisms are amorphous, the Act makes little secret of who will foot the bill.

1. 86 Fed. Reg. 7,619 (Feb. 1, 2021). 2. 26 U.S.C.S. § 45Q.

With armies of tax lawyers involved in both drafting the Act and in fighting its goals, it remains to be seen whether the Act's funding mechanisms will create the financial windfall hoped for by the Biden Administration.

First, the Act provides for a minimum 15% corporate tax on the largest U.S. corporations—including energy giants such as Exxon and Chevron. Next, the Act provides for $80 billion in additional funding for the IRS—ostensibly to enhance customer service, but also to dramatically increase tax enforcement for the wealthiest American corporate and individual taxpayers. Finally, the Act provides for a tax on stock buyback programs, in an effort to force corporate reinvestment, rather than direct shareholder enrichment.

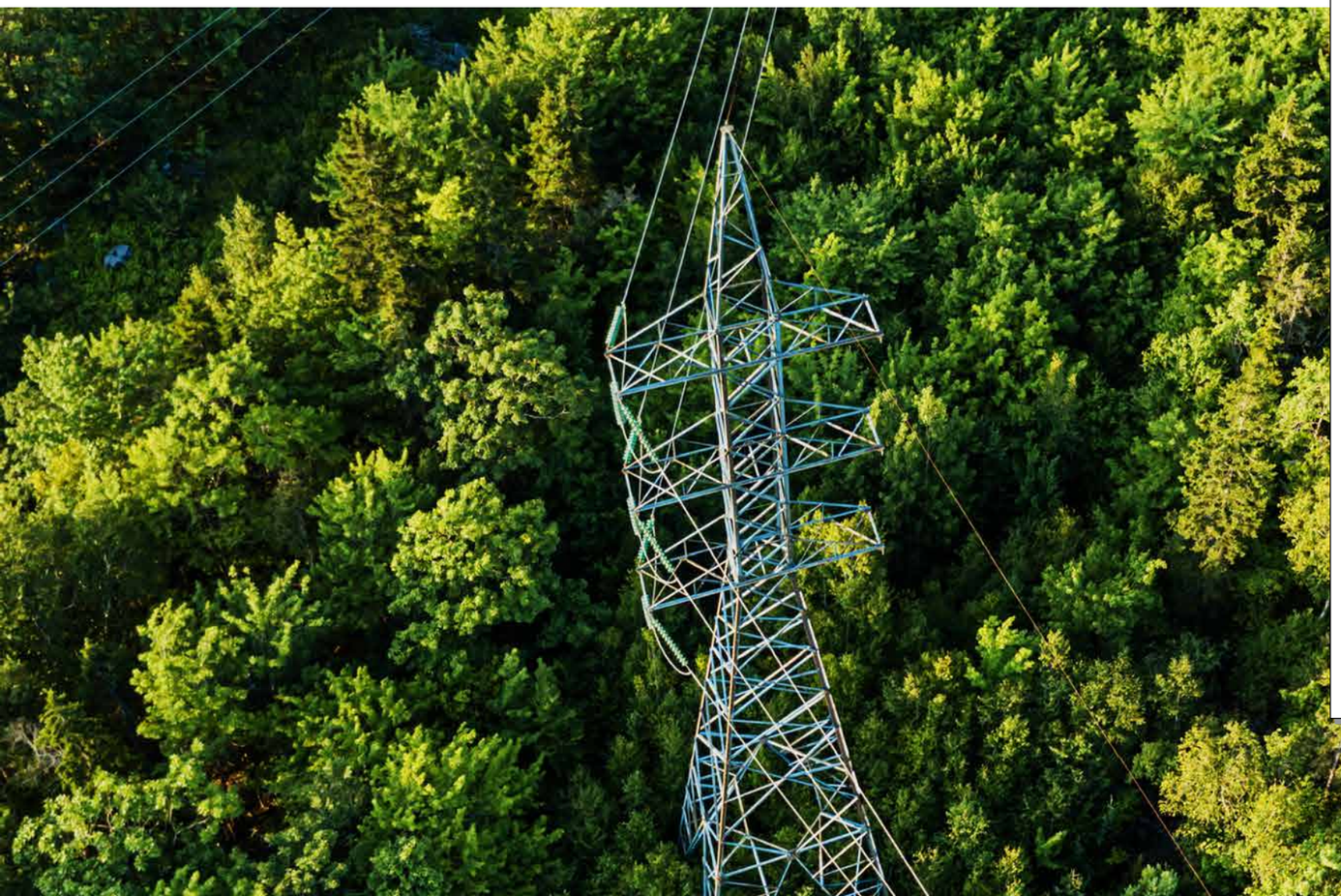
By increasing taxes and tax enforcement, and penalizing stock buyback programs (which often occur at major energy companies), the Biden Administration hopes the Act will both pay for itself and actually decrease the budget deficit on a year-over-year basis. With armies of tax lawyers both involved in drafting the Act and in fighting its goals, it remains to be seen whether the Act's funding mechanisms will create the financial windfall hoped for by the Biden Administration.

> ...the act has provided the country with its best chance, to date, to combat climate change in a way that is meaningful, measurable, and in line with the efforts of other developed nations around the world.

Will the Act Actually Meet Biden Administration Climate Goals?

There is no doubt the Act invests heavily in carbon-reduction and elimination technologies and programs. However, much of this investment comes in the form of tax credits and incentives, the future effects of which rely, in part, on interest rates; economic growth; future tax policies; commodity prices; local, state, and national permitting; and regulatory hurdles. Each of these items can increase or decrease the true monetary value of incentives provided by the Act.

Siting these new renewable energy projects will increasingly become a problem as well—with the best sites already taken, and only more and more marginal locations available for future development. And there is the increasing problem of grid stability, interconnectivity, and power transmission. It is anticipated that a fully upgraded electricity grid with modern transmission facilities sufficient to handle all of the new renewable energy projects anticipated over the next 10 years may cost up to $2.5 trillion. The Act provides no answer (and no funding) to manage this significant problem, although a small down payment of $65 billion in funding can be found in 2021's bipartisan Infrastructure Investment and Jobs Act.



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As our electricity grid continues to age, becomes more fragile, and becomes more susceptible to dramatic outages, something will have to be done on the transmission side to keep pace with new renewable generation.

Despite its implementation challenges, if all goes as planned (which things in Washington rarely do) then the Act is on pace to help the United States hit a 40% carbon-reduction goal by the year 2030. This is a lofty goal, and one worth shooting for. But to reach this goal, hundreds of millions of new solar panels, tens of thousands of new industrial-scale wind turbines, and a multi-fold increase in industrial-scale battery storage must be installed. Whether this dramatic renewable energy growth can be achieved or not is an open question, and the devil is often in the details. However, the Act has provided the country with its best chance, to date, to combat climate change in a way that is meaningful, measurable, and in line with the efforts of other developed nations around the world. L

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Cameron Kinvig PRACTICAL GUIDANCE

Fighting Climate Change While Fighting Russia

The European Union (EU) as a block of nations is the third largest greenhouse gas emitter in the world. However, European countries have long focused on alleviating climate change and have taken the lead on efforts to reach net zero emissions.

AS EARLY AS 1970, PRINCE CHARLES OF THE UNITED Kingdom (now King Charles III) began to raise European awareness about climate change and how greenhouse gas emissions were causing global warming. Since then, albeit in fits and starts, Europe has taken the worldwide lead in fighting climate change. Now, as Europe collectively fights off the advances of a resurgent Russia and Vladimir Putin, the world will see if Europe can balance fighting climate change with the necessity of keeping its people and industries alive and healthy.

The EU Takes the Lead on Fighting Climate Change

By 1992, the United Nations had adopted its Framework Convention on Climate Change (UNFCCC), committing all 154 signatory countries to voluntary, non-binding efforts to reduce greenhouse gas emissions by the year 2000. The UNFCCC set the stage for the first conference of the parties (COP) in Berlin in 1995, where attendees began to discuss adopting stricter, binding, measures to combat climate change. These COP meetings eventually led to the adoption of the Kyoto Protocol—the world's first legally-binding greenhouse gas reduction treaty—in 1997. Through the Kyoto Protocol, governments throughout Europe agreed to collectively reduce greenhouse gas emissions by 8% between 1997 and 2012.

EU countries were far ahead of their 8% greenhouse gas reduction goal by the time the Kyoto Protocol was fully implemented and became law in 2005. In part to inspire

other countries to make greenhouse gas emission reductions, EU leaders agreed to more sweeping changes. In 2007, EU leaders committed to what they called their 20-20-20 by 2020 Strategy, whereby greenhouse gas emissions were to be reduced by 20% when compared to 1990 levels, 20% of all energy produced was to come from renewable sources, and the EU block was to consume 20% less energy in 2020 when compared to 2005 levels. These binding commitments put the EU on a path toward climate change leadership.

By 2015, EU member states were ready and willing to make additional climate change commitments. Through the Paris Agreement, EU states promised to reduce their carbon dioxide emissions by 40% by the year 2030. By November of 2019, the EU had increased its commitment further, promising in a non-binding resolution to commit to carbon neutrality by 2050 and a 55% reduction in carbon emissions by 2030. This resolution became legally binding in 2021 with the passage of the EU Climate Law. Germany went even further, passing laws promising to stop all coal-fired electricity production by 2038 and reduce greenhouse gas emissions by 65% by no later than 2030. The fight against climate change in Europe was real and it was significant.

Russia's Actions Threaten the Worldwide Climate Paradigm

On February 24, 2022, Russia officially invaded the country of Ukraine. In doing so, it drew the ire of most of the western world—including the EU and most EU member states. Significant sanctions followed, with EU members banding together to punish Russia for its brazen invasion of its smaller, weaker neighbor. As the war has become a military and economic disaster for Russia and continues to drag on much longer than most commentators thought possible, these sanctions have begun to impose a price on all parties involved.

The EU is the largest importer of Russian energy products in the world—a trade worth over $100 billion per year. Pre-war, EU member states collectively imported roughly 40% of their natural gas directly from Russia. Countries such as Germany relied even more heavily on Russian gas, with the NordStream 1 and 2 pipeline projects designed to furnish enormous amounts of Russian natural gas directly to Germany. In response to a crippling sanctions regime, Russia struck back at sanctioning countries by threatening their energy supplies. Russia slowly decreased natural gas deliveries to European countries and has now all but halted them. With the recent destructive sabotage of both NordStream pipelines projects, this situation does not appear capable of change any time soon. While some alternate sources of natural gas—such as liquified natural gas (LNG) from the United States and the Middle East—do exist, many countries lack the sophisticated and expensive LNG terminals necessary to receive and process this form of natural gas. Storage facilities throughout Europe retain significant natural gas reserves, but those may quickly be depleted if the European winter turns severe. Rolling blackouts and industrial shutdowns are a very real possibility.

Europe Faces a Hobson's Choice on Climate Change

The circumstances presented by Russia's war in Ukraine have led EU leaders to a Hobson's choice: do they allow their populace to freeze and their economies to fail, while maintaining climate change goals, or do they ramp up energy production from non-green sources, including coal, in an effort to protect citizens and industry?

> ...countries like Germany have had to walk back their recent climate-change initiatives and turn, in part, to nuclear plants and mothballed coal-fired power plants to keep the lights on and heaters working.

EU leaders first looked to existing LNG terminals as a possible savior. While countries like Germany do not have working LNG terminals they can utilize, others, like France, Spain, and Italy have significant LNG regasification capacity. In all, EU countries have enough LNG capacity to supply up to 40% of EU natural gas demand. Pre-war, this capacity was under-utilized, with some LNG terminals operating at 20% capacity. Post-war, they are operating at or near 100% capacity, with some agreements now in place to allow the transfer of natural gas between states like France and Germany. However, because Europe imports over 90% of its natural gas from abroad, and because excess LNG capacity is still not sufficient to fully replace Russian gas supplies, LNG cannot solve all of Europe's energy problems.

Because of this fact, countries like Germany have had to walk back their recent climate-change initiatives and turn, in part, to nuclear plants and mothballed coal-fired power plants to help keep lights on and heaters working. These, of course, are not environmentally friendly when compared with wind and solar power generation technologies but offer consistent power generation that can act as a baseline for the EU power grid.

At least in the short term, Germany has brought back so-called brown coal power plants from mothball status and has extended the operating licenses for many cleaner lignite or hard coal power plants from sunset status in 2022 into early 2024. In total, it has taken steps to reactivate or extend the lives of more than 20 coal-fired power plants and its three remaining nuclear power plants, in an effort to save natural gas for residential heating and industrial processes this winter (and because it is now obligated to send electricity to France in return for LNG shipments). This effort is not being done to save money over hard-to-obtain natural gas supplies, as the price of coal has increased by over 600% in Germany this year. Instead, it is being done out of necessity, since many households rely on natural gas for heat throughout the winter months, and Germany's industrial sector is a heavy user of natural gas—not just electricity—in its manufacturing processes.

Germany may have relied more heavily on Russian natural gas than some, but it is not alone in taking evasive steps to reactivate coal-fired electricity generation. Austria, Poland, the Netherlands, and Greece have also moved to reactivate coal-fired electricity generation in an effort to replace Russian natural gas supplies, and Poland has sought to subsidize coal prices for its populace—many of which use coal for direct household heat.

Will This Last Forever?

German and other EU officials have sought to reassure the world regarding the Hobson's choice they have made. They have publicly stated that there's nothing to worry about—these emergency measures will only last a short time, and then Europe will be back to combatting climate change full time. Germany even moved up its coal-free climate goal from 2038 to 2030 and has forced any coal-fired electricity producers to use excess profits to build new wind and solar generating capacity. However, the answer to the question of how long this energy emergency will last may lie with Russia itself. As its war in Ukraine drags on with no end in sight, and with European efforts to import sufficient gas supplies struggling to gain traction, it may be a very long winter. If the Ukraine war lasts into 2023 with no Russian natural gas being supplied, the prospect of next winter may simply be untenable for even the staunchest climate change warriors in Europe. L

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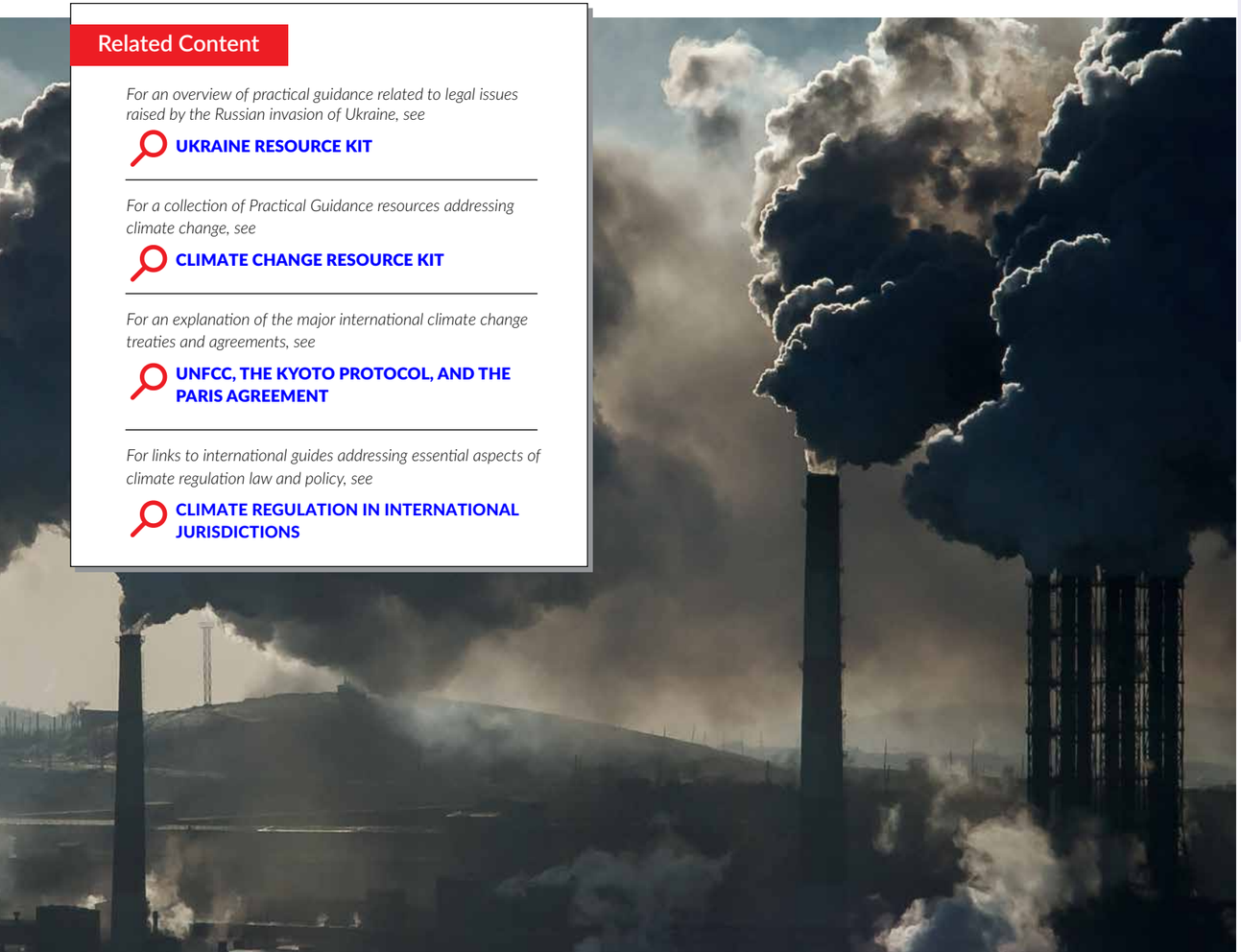

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CLIMATE REGULATION IN INTERNATIONAL JURISDICTIONS

John Erskine NOSSAMAN LLP

Sea Level Rise: A Guide for Public and Private Projects

This article discusses the legal and policy framework for addressing sea level rise (SLR) in the 21st century in the United States, with an emphasis on the California Coastal Act (the Coastal Act), its administrative regulations, and policy guidance as promulgated by the California Coastal Commission (the Coastal Commission).

THIS ARTICLE ALSO PRESENTS A BRIEF OVERVIEW OF THE laws and policies that have been implemented in the last decade to address sea level rise in Florida and New York.

The 26th United Nations Climate Change Conference of the Parties (COP26) wrapped up in Glasgow, Scotland, on November 12, 2021, and policymakers, politicians, and the press continue to review the success of the event that "many believe to be the world's best last chance to get runaway climate change under control."[1] Only time will tell whether global warming will continue unabated, seas will rise, and coastal cities will suffer environmental and economic disaster in the coming decades.

While the jury is still out in assessing the latest UN climate confab's success in achieving consensus on staving off environmental catastrophe, geotechnical engineers, planning firms, architects, and land use lawyers in the United States are dealing with more urgent issues, particularly in planning for public infrastructure and private development projects near or on the coast. Sea level rise planning and regulatory guidance for local governments and coastal property owners is a major policy and legal issue affecting almost 30% of the U.S. population residing or working in U.S. coastal counties.

The Federal Coastal Zone Management Act (CZMA) of 1972

The U.S. Congress passed the Coastal Zone Management Act (CZMA)[2] in 1972. The '70s was an unprecedented period for passage of initiatives and new laws to protect coastal resources and ensure public access to the coast in California and nationally. Sweeping new environmental programs and legislation included the Clean Air Act of 1970,[3] the Clean Water Act of 1972,[4] and the National Environmental Policy Act,[5] signed into law by President Richard M. Nixon.

The CZMA states:

The Congress finds and declares that it is the national policy—

1. to preserve, protect, develop, and where possible, to restore or enhance, the resources of the nation's coastal zone for this and succeeding generations;
2. to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development, which programs should at least provide for-

. . .

B. the management of coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas likely to be affected by or vulnerable to sea level rise, land subsidence, and saltwater intrusion, and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands.[6]

The National Oceanic and Atmospheric Administration (NOAA), a regulatory agency within the U.S. Department of Commerce, implements the CZMA.

CZMA and the California Coastal Act

On January 28, 1969, an explosion in Union Oil's Platform A in Santa Barbara created one of the largest oil spills in U.S. history. The spill—along with high-rise development on beaches in Coronado, California, and Los Angeles County, and a massive oceanfront subdivision in Sonoma County called Sea Ranch that blocked 10 miles of public access—led in short order to a statewide initiative, Proposition 20, which created the Coastal Act.[7]

Proposition 20 required that the Coastal Act, with its six regional commissions, be reauthorized by the legislature prior to the end of the 1976 legislative term. The umbrella federal legal authority for the Coastal Commission's implementation of the CZMA is CZMA § 306(d)(6).[8] The legislative approval did occur in 1976 (cleared by one vote) and a statewide Coastal Commission was created.

The Coastal Commission is responsible for reviewing proposed federal projects and federally authorized activities to assess their consistency with the California Coastal Management Program approved by NOAA in 1977.

Legal counsel representing any federal agency or contractor implementing a federal project should be cognizant that any federal

1. *See* COP26 website. 2. 16 U.S.C.S. §§ 1451 through 1467. 3. Pub. L. No. 91-604, 84 Stat. 1676 (Dec. 31, 1970). 4. 33 U.S.C.S. §§ 1251–1389. 5. 42 U.S.C.S. § 4331. 6. 16 U.S.C.S. § 1452. 7. Cal. Pub. Res. Code § 30000 et seq. 8. 16 U.S.C.S. § 1455(d)(6), 15 C.F.R. § 930.11(o).

agency activity or federal development project, whether it occurs inside or outside of the coastal zone, that affects land or water uses, or natural resources of the California Coastal Zone, is subject to the federal consistency provisions of the CZMA, CZMA § 307(c)(1),[9] overseen by the Coastal Commission.

A federal development project includes any federal activity involving the planning, construction, modification, or removal of public works facilities or other structure, and the acquisition, utilization, or disposal of land or water resources.[10]

The CZMA also provides for consistency certifications for activities such as offshore oil exploration and development and production of oil or gas from any area that has been leased under the Outer Continental Shelf (OCS) Lands Act.[11] Given recent (2021) California oil platform spills and increasing opposition to continuance of the federal OCS leases, practitioners should be aware of these consistency certifications for oil production and other offshore alternative energy initiatives or activities. No federal license or permit activity (each of which is described in detail in an OCS plan) may be approved by a federal agency until the requirements of the CZMA are satisfied.[12]

It is important to note that the Secretary of Commerce can override the State Coastal Commission's objection to a federal CZMA finding of inconsistency if they determine that the OCS activities are consistent with the objectives or purposes of the federal CZMA or are necessary in the interest of national security.[13]

9. 16 U.S.C.S. § 1456(c)(1), 15 C.F.R. § 930.30. **10.** 15 C.F.R. § 930.31(b). **11.** 43 U.S.C.S. § 1331 et seq. **12.** 16 U.S.C.S. § 1456(c)(3)(B), 15 C.F.R. § 930.76. **13.** 16 U.S.C.S. § 1456(3)(A).

Managing Sea Level Rise in California

Policymakers; coastal environmental nongovernmental organizations such as the Sierra Club, Audubon Society, and Surfrider Foundation; and coastal and land use lawyers representing public and private clients have been aware of the ongoing need to address coastal hazards and the impact of severe storms, wave run-up, sea level rise, land subsidence, and erosion, as the propensity to locate public facilities, commercial structures, and housing in coastal areas has intensified in the 20th and 21st centuries.[14] It is estimated that almost 30% of the U.S. population lived in coastal counties as of 2018, according to census data of the U.S. Department of Commerce.

In California, formal and focused SLR planning was initiated at the state level after former California Governor Arnold Schwarzenegger signed an executive order in 2008 calling for the development of a statewide SLR strategy and ordered state agencies, in particular the Coastal Commission, to formally plan for SLR impacts.

The Coastal Commission, following a series of public hearings on the subject in 2015, published its initial draft Sea Level Rise Policy Guidance (the 2015 Policy Guidance).[15] After additional public comment periods and further revisions by the Coastal Commission staff, the 12-member Commission unanimously adopted the Coastal Commission's first advisory for coastal cities, counties, and permit applicants.[16]

In 2018, utilizing information presented by the California Ocean Protection Council's (OPC) Science Advisory Team, the Coastal Commission adopted an updated version of the 2015 Policy Guidance.[17]

Just recently, on November 17, 2021, the Coastal Commission, pursuant to a grant agreement with NOAA under the CZMA, adopted new SLR policy guidance for public infrastructure focused primarily on coastal roads, highways, water, and wastewater systems. This critical infrastructure network is managed by California's 76 coastal jurisdictions as well as state and regional agencies and special districts, and policies adopted for development, redevelopment, and management of that infrastructure will be implemented through Commission-certified Local Coastal Programs (LCPs) and plans. The 2021 guidance document[18] (the 2021 Policy Guidance) presents six key considerations for SLR adaptation planning that are intended to enhance coastal resilience of transportation and water facilities.

As discussed below in greater detail, shoreline protective devices (SPDs), such as revetments and seawalls, continue to be disfavored, despite being the most common and widely utilized method to address coastal hazards in California and worldwide. Nature-based adaptation strategies are now prioritized by the Commission over strategies with additional coastal resource impacts.

Many coastal cities and counties have been critical of various aspects of the 2021 Policy Guidance, including its insistence on using the H++ High-Risk SLR scenario for hazard modeling—since there is zero assigned probability of the projected 10 feet of sea level rise occurring by 2100 associated with that scenario[19]—and the Coastal Commission's outright rejection of Cal. Pub. Res. Code § 30235's allowance of seawalls and other SPDs.[20] For further guidance, see the discussion of Low-, Medium-, and High-Risk aversion scenarios below. The H++ High-Risk scenario is extremely unlikely to occur by 2100, according to NASA scientists and other commenters, including climate scientists from MIT and Boston College.[21]

14. *See* 16 U.S.C.S. §§ 1452, 1303(1). **15.** *See* Coastal Commission website. **16.** Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits (the 2018 Policy Guidance). **17.** Rising Seas in California: An Update on Sea Level Rise Science (the 2018 Update). **18.** Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone. **19.** *See* League of California Cities comment letter of September 24, 2021, and City of Huntington Beach comment letter of September 24, 2021. **20.** *See* Item 6(e) of Coastal Commission Hearing Agenda of November 17, 2021. **21.** *See* GeoSoils Comment Letter on CDP Application No. 6-20-0375.

Best Available Science—Models, Scenarios, and Guidance for Sea Level Rise Planning and Permitting Decisions

The potential impacts of sea level rise on the land, tidelands, and water areas within the defined Coastal Zone of the State of California fall directly within the Coastal Commission's planning and regulatory responsibilities under the Coastal Act.[22] The Coastal Zone is the land and water area seaward to the state's outer limits of jurisdiction, offshore islands, and generally 1,000 yards inland from the mean high tide line; it does not include the area of jurisdiction of the San Francisco Bay Conservation and Development Commission.[23] The Coastal Commission's legislative mandate requires it to use best available science to guide coastal management and decision-making processes—in both legislative and permitting decisions.[24]

Use of best available science has been a widely litigated issue at both the federal and state levels, but courts will defer to agencies, particularly where a high degree of technical scientific expertise is required.[25]

Sea level rise and coastal hazard analyses are therefore required in LCPs prepared by coastal cities and counties, port master plans, public works plans, long range development plans, coastal development permits (CDPs), federal consistency reviews, and other Coastal Act-defined decision processes.

As of this writing, the Coastal Commission advocates that the best available science for probabilistic sea level rise in California in the coming decades is the OPC Science Advisory Teams' 2018 Update.[26] The 2018 Update is based on the ongoing work of the bureau of climate scientists serving on the Intergovernmental Panel on Climate Change (IPCC) formed by the UN.

Legal counsel advising public and private clients should note that the Coastal Commission's 2018 Policy Guidance states, "Other authoritative sea level science and projections may also be used, in part or in full, provided they are peer-reviewed, widely accepted within the scientific community, and locally relevant."[27]

However, the best available science is presumptively deemed to be that presented in the Coastal Commission's 2018 Update.[28] Because the best available science is a dynamic process, and subject to numerous assumptions, the question becomes, how does an advisory-only policy guidance document carry the force of law, particularly in critical private and public permitting application? Many affected stakeholders and, in particular, coastal cities and counties have posited this question.

The primary legal answer is found in Cal. Pub. Res. Code § 30253, which requires that new development minimize coastal hazard risks without the use of shoreline protective devices or coastal bluff retaining walls that would "substantially alter natural landforms."[29] However, another provision of the Coastal Act states that revetments, breakwaters, seawalls, and other such construction that alters natural shoreline processes "shall be permitted when required to serve coastal-dependent uses or to protect existing structures . . . in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply."[30]

These two critical and, in practice, diametrically conflicting provisions of the Coastal Act set up SLR risk aversion scenarios and pose significant challenges both for public agency coastal planners attempting to incorporate adaptation or protection methodologies in LCPs, and for private or public applicants seeking to avoid infeasible conditions of approval that are often imposed on CDPs.

The best available science provided in the 2018 Update contains the following statements:

- In the past 100 years, global mean sea level increased by seven to eight inches (less than one foot in 100 years).
- Global average sea level rise is driven by the expansion of ocean waters as they increase in temperature, addition of fresh water from melting land-based ice sheets and glaciers, and extractions in groundwater.
- The 2018 Policy Guidance's updated projections of probabilistic sea level rise is based on measurements from 12 tidal gauges at various points along the entire stretch of California coast utilized in computer models.
- At the national level, the IPCC's Third National Climate Assessment released in 2014 provided four sea level rise scenarios ranging from eight inches to seven feet by 2100 based on modeled assumptions reflecting different predicted amounts of future greenhouse gas emissions, ocean warming, and ice sheet loss.
- The 2018 Policy Guidance, Appendix G, provides Low Risk Aversion, Medium-High Risk Aversion, and Extreme Risk Aversion probabilistic projections for the modeled height of sea level rise by decade, starting in 2030, for the 12 tidal gauges along the California coast.[31]

Legal counsel for private project applicants and counsel for public agencies should continue to closely evaluate and analyze the Coastal Commission's three mandated risk aversion scenarios. As Table G-10 shows, the Low Risk Aversion scenario has a 17% probability, the Medium-High Risk Aversion scenario has a 1-in-200 chance or 0.5% probability, and the Extreme Risk Aversion (H++) scenario has no assigned probability of occurring.[32]

It is important to note that these projections emanate from the IPCC and its climate models. The computer modeling of future SLR utilized by the IPCC was based on less-than-precise measurements taken at a global network of tidal gauges between 2009-2012. The complexity of assumptions and multitude of models is increasingly a challenge for climate scientists. The most extreme scenarios are increasingly being rejected by the UN's panel.[33] However, there are now actual measurements of SLR at California's 12 coastal tidal gauges for over 10 years, from which the rate of SLR can be compared to predictive modeling.

Recent analysis by coastal engineering experts (including GeoSoils, Inc. and others) of NOAA's tidal gauge data from the La Jolla, California, tidal gauge, based on satellite altimetry measuring the actual rate of sea level rise over the last decade (rather than modeled projections), indicate the modeling the IPCC relied on may be significantly off.[34] NOAA's measurements at this tidal gauge indicate that sea level rise of only 0.079 feet has occurred over the last 11 years. This is actual data, rather than hard-to-calibrate computer models, and would project out to an SLR of only 0.5 feet by the year 2100, rather than 6 to 10 feet by 2100. If current measurements are matched to the various SLR models, the model that most closely aligns with what is currently being measured projects an SLR of about one foot by the year 2100. Satellite altimetric data from some of the other 11 tidal gauges show similar lower levels of SLR, exactly on par with the seven to eight inches that occurred in the last century.

22. Cal. Pub. Res. Code § 30006.5 et seq. **23.** Cal. Pub. Res. Code § 30103. **24.** Cal. Pub. Res. Code § 30335.5. **25.** City of Waukesha v. EPA, 320 F.3d 228, 247 (D.C. Cir. 2003) ; *see also* Maine v. Norton, 257 F. Supp. 2d 357, 389 (D. Me. 2003) ("The court must defer to the agency's expertise, particularly with respect to decision-making which involves 'a high level of technical expertise.'"); A.M.L. Int'l, Inc. v. Daley, 107 F. Supp. 2d 90, 102 (D. Mass. 2000) ("Indeed, a reviewing court must afford special deference to an agency's scientific expertise."). **26.** *See* 2018 Policy Guidance. **27.** *Id.* **28.** *Id.* **29.** Cal. Pub. Res. Code § 30253(a), (b). **30.** Cal. Pub. Res. Code § 30235. **31.** As an example, see Table G-10 in Appendix G to the 2018 Policy Guidance for the projected sea level rise for the Los Angeles tidal gauge.

32. *See* 2018 Policy Guidance, Appendix G. **33.** *See* Robert Lee Hotz, *Climate Scientists Encounter Limits of Computer Models, Bedeviling Policy,* The Wall Street Journal (Feb. 6, 2022). **34.** *See, e.g.*, GeoSoils Comment Letter on CDP Application No. 6-20-0375.

Practical Application of the Coastal Commission's SLR Policy Guidance

While the Coastal Commission's 2015, 2018, and 2021 guidance all state that they are advisory-only and not "regulatory document[s] or legal standard of review," in practice, they are being force fit through suggested modifications from the Coastal Commission into mandatory SLR LCP amendments. Many of these SLR LCP amendments have been years in preparation, yet the Coastal Commission staff has routinely rejected LCP amendments—even after some suggested modifications have been accepted incorporated—leading to withdrawals by various coastal cities.[35]

Notably, the California Legislature passed 2021 Cal. SB 1, which now mandates SLR implementation in LCPs, with the hope of $100 million per year in state funding for grants to coastal cities and counties for preparation of LCPs consistent with the 2018 Policy Guidance and the 2021 Policy Guidance. This may lead to uniform adaptation mandates from the Coastal Commission rather than a menu of coastal resiliency options, thus removing local options in LCPs.

SLR policy guidance is implemented through the LCP certification process, which serves to ensure that the 61 cities and 15 counties that have some or all of their boundaries in the Coastal Zone comply with SLR guidance. The carrot provided to local elected officials is return of permit authority for coastal development projects except in retained jurisdiction areas. The stick is control of all coastal permitting within the coastal city or county by the Coastal Commission through its district offices.

As noted above, even after an LCP is certified and becomes effective, the Coastal Commission retains continuing direct permit authority over some lands (e.g., over tidelands, submerged lands, and public trust lands) and authority to act on appeals for certain categories of local CDP decisions.

The SLR policy guidance now applies to all development in the Coastal Zone through review and approval of CDP applications. The definition of the term development is extensive and comprehensive. Cal. Pub. Res. Code § 30106 defines development to be:

> On land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act . . . and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg–Nejedly Forest Practice Act of 1973 (commencing with Section 4511). As used in this section, "structure" includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line.

35. *See, e.g.,* the City of Del Mar's June 2021 notice of withdrawal of an SLR LCP amendment following receipt of 25 staff-recommended suggested modifications.

> ...adaptation methods are expensive, reduce square footage of structures, and require breakthrough first floor construction techniques and/or an often-drastic reduction in site utilization due to increased setbacks.

To comply with Cal. Pub. Res. Code § 30253, referenced above, or the equivalent LCP provision, both private and public development projects now need to be planned, located, designed, and engineered for changing tidal and wave run-up impacts that will be potentially exacerbated by various sea level rise scenarios. The Commission's authorization of which risk scenario to utilize is critical to the viability, realization, and cost of any private or public project and the best use of coastal property.

Sea Level Rise Adaptation Strategies

Adaptation strategies for coastal inhabitants and local government decisionmakers may involve modifications to land use plans (in LCPs), regulatory changes, individual project modifications, or permit conditions that focus on avoidance or minimization of risks and the protection of coastal resources, also described as building coastal resiliency. Not just specific to California coastal, bluff, and bayfront properties, the options for adapting to coastal hazards that may experience a greater risk of loss of property and life due to increases in sea level rise include (1) protection, (2) accommodation, and (3) retreat.[36]

Protection

Cal. Pub. Res. Code § 30235 addresses protection from sea level rise, erosion, and coastal hazards. The statute permits shoreline protective devices (e.g., seawalls, revetments, etc.) when necessary to serve coastal-dependent uses, such as marinas and commercial fishing operations, or to protect existing structures or public beaches in danger from erosion and when the protective device is designed to eliminate or mitigate impacts on sand supply.

Unfortunately, existing structures have been deemed by the Coastal Commission to be only those structures in existence prior to the January 1, 1977, effective date of the Coastal Act.

No appellate decision in California addresses the legal question of whether the term existing structures in Cal. Pub. Res. Code § 30235 means only those structures built prior to the Coastal Act—the Coastal Commission's interpretation—or whether it also includes structures previously approved by the Coastal Commission and in existence at any time the Coastal Commission acts on an application for a new seawall or revetment. There is also no appellate decision addressing the ostensibly mandatory nature of this section of the statute, which states that the SPDs "shall be permitted."[37]

Many legal observers believe that Cal. Pub. Res. Code § 30235 was intended to apply to all Coastal Commission-approved structures, even those built post-January 1, 1977, where the approved development is in fact in danger from coastal hazards and the proposed SPD is the least environmentally damaging alternative to abate the danger.

The Coastal Commission, its legal counsel, and property owners Walter Cavanaugh and Gary Grossman, actually took that very position in *Surfrider Foundation v. California Coastal Commission*,[38] but that unpublished decision was decided by the California Court of Appeal on other grounds. Since the mid-2000s, the Coastal Commission has interpreted existing structures to mean only pre-1977 structures that have not been substantially modified, although Commission legal counsel has acknowledged that "in a few instances . . . the Commission has treated structures built after 1976 as existing structures entitled to shoreline protection even if no adjacent pre-Coastal Act structure also needed protection."[39]

Due to the pervasive influence of lobbying of the Coastal Commission's appointing authorities and the California legislature and commissioners, and litigation by Surfrider Foundation, the Coastal Commission now primarily focuses on soft protection options such as living shorelines, not SPDs.[40] These options are often not viable means to ensure maintenance of critical infrastructure, private structures, and, in some cases, access to the coast (roads, bridges, and coastal accessways).

Accommodation

Accommodation includes siting and design standards and retrofit of existing structures. Common in Gulf States of the eastern seaboard and Florida, these adaptation methods are expensive, reduce square footage of structures, and require breakthrough first floor construction techniques and/or an often-drastic reduction in site

36. *See* Figure 17 in Chapter 7 of the 2018 Policy Guidance. 37. Cal. Pub. Res. Code § 30235. 38. Surfrider Found. v. Cal. Coastal Comm'n, 2006 Cal. App. Unpub. LEXIS 4864 (June 5, 2006). 39. *See* 2018 Policy Guidance, Chapter 8. 40. Examples are provided in Chapter 7, Adaptation Strategies, of the 2018 Policy Guidance.

utilization due to increased setbacks. Accommodation measures are introduced and adopted by local government in certified LCPs or imposed on project applicants during hearings on CDPs as special conditions of approval.

Managed Retreat

Finally, managed retreat—the erstwhile lodestar of some climate scientists and environmental activists for addressing the next 75-100 years of sea level rise—is, in many commenters' opinions, financially burdensome and logistically problematic if not impossible to accomplish on any effective scale in urban and suburban coastal settings.[41] Managed retreat along the California coast has been estimated to cost hundreds of billions of dollars and would require removing and/or completely relocating large commercial structures, businesses, oceanfront residential subdivisions, highways, bridges, and other public facilities. Many cities and public agencies have concluded that this approach is essentially financially infeasible. This author is of the opinion that policy directives based on 1-in-200 probability that SLR will be in the six- to seven-foot range by 2100, let alone the speculative H++ scenario, are ill-advised.

California Senate Bill 83 was introduced on December 15, 2020,[42] and proposed a revolving low-interest loan program for local governments to purchase properties found to be vulnerable to sea level rise and to repay those loans with proceeds accrued through rental use of the properties. This would have been a financial incentive to institute managed retreat through the adoption of LCP amendments. While the bill passed the legislature, during the 2021 session, Governor Gavin Newsom vetoed the bill, stating that it did not "comprehensively address the costly activities envisioned [to protect vulnerable coastal properties], likely to be carried out over decades."[43]

Related Content

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STORMWATER PERMITTING AND MANAGEMENT REQUIREMENTS

For a discussion of the environmental impact review process required in some real estate transactions, see

ENVIRONMENTAL IMPACT REVIEW IN REAL ESTATE TRANSACTIONS

The Hybrid Adaptation Approach to Sea Level Rise in Practice

The 2018 Policy Guidance references a hybrid adaptation strategy, which calls for (1) accommodation over the short term and relocation over the long term, (2) updating land use designations and zoning ordinances, (3) redevelopment restrictions, and (4) permit conditions.[44] This hybrid approach to development approvals already incorporates a form of forced retreat through nonnegotiable CDP conditions.

After determining compliance with applicable land use plan policies and the implementation plan regulations within the jurisdiction's Commission-certified LCP (or, if no LCP, Chapter 3 of the Coastal Act), practitioners and their geotechnical engineers should focus on addressing the coastal hazard-submittal requirements for CDP applications.

The project site must be examined for potential erosion, flooding, wave attack, and wave run-up hazards. This includes consideration of potential 50- to 100-year storm events and, of course, calculated effects of expected sea level rise depending on the identified life of the project. Counsel representing private or public project applicants must ensure that the project team has qualified and experienced coastal engineering consultants.

Despite the allowance under Cal. Pub. Res. Code § 30235 for protection of pre-Coastal Act or coastal-dependent use development through SPDs, the Coastal Commission uses Cal. Pub. Res. Code § 30253 to prohibit or limit any use of seawalls, revetments, or other shoreline protection now, or in the future, due to the potential elimination of lateral public beach access (i.e., access parallel to the mean high tide line) through erosion. This presents significant challenges to the Coastal Commission's finding that the project has sufficiently "minimize[d] risks to life and property in areas of high geologic, flood, and fire hazard."[45]

Public Trust Resources

Coastal hazards and seawalls, revetments, and other shoreline protective devices raise public trust concerns. The common law public trust doctrine protects the public's right to access and/or navigate tidelands, submerged lands, and navigable waters, which the state holds in trust for the public's use and enjoyment.[46]

Localized site (beach, bayfront, etc.) conditions must be carefully evaluated so that, based on the appropriate sea level rise risk scenario and beach width, coastal hazards will not likely impact the proposed development during the expected life of the project.

As a result, recent CDP approvals by the Coastal Commission have imposed a special condition that it will not permit future SPD to protect the residence or commercial building. Additionally, applicants are also required to agree that they will remove the approved development if:

- Any government agency has ordered the structures to not be occupied, or to be removed, due to coastal hazards
- Essential services to the site can no longer feasibly be maintained (e.g., utilities, roads)
- The development is no longer located on private property due to the migration of the public trust boundary
- Removal is required due to new SLR policies in an area's LCP
- The development would require an SPD to prevent any of the items listed above[47]

Special Conditions require new beachfront home permit applicants to waive their legal right under Cal. Pub. Res. Code § 30235 to any future shoreline protective device.[48]

In *Lynch v. California Coastal Commission*,[49] two beachfront homeowners in Encinitas, California (just north of San Diego) received a CDP for a new seawall, but with a time limit that requires a new hearing after 20 years; the Coastal Commission wanted to assess the impact of sea level rise and potentially remove the bluff-protecting device. Notwithstanding the fact that the homeowners had an older existing seawall (lost in a major storm) that was not subject to a time limit, the Coastal Commission's managed retreat condition was upheld by the California Supreme Court on the grounds of waiver: Applicants could not accept the benefit of a permit, construct development, and then ignore approved and accepted conditions.[50] In this case, the homeowners objected to the special conditions but nevertheless signed and recorded deed restrictions agreeing to the conditions and completed the project, thereby waiving their right to challenge the conditions.[51]

Managed retreat, described in the 2018 Policy Guidance as advisory and only an option in certain areas, is essentially being fully implemented by the Coastal Commission under its hybrid adaptation approach.

41. *See* 2018 Policy Guidance; Coastal Commission CDP Archives. **42.** 2021 Bill Text CA S.B. 83. **43.** *See* October 7, 2021, SB 83 Veto Message. **44.** *See* 2018 Policy Guidance, Figure 17.

45. Cal. Pub. Res. Code § 30253(a). **46.** Cal Const, Art. X § 4. **47.** *See* Commission CDPs approved from 2018 to present. For example, *see* CDP Application No. 5-17-0678. **48.** *See* CDP Application No. 5-17-0678, Special Condition No. 3. **49.** 229 Cal. App. 4th 658 (2014). **50.** *Id.* **51.** *Id.*

Florida Statewide Flooding and Sea Level Rise Resilience Act; Coastal Construction Control Line

In May 2021, Governor Ron DeSantis signed 2021 Fla. SB 1954, which, along with the 2021-2022 budget, will provide over $640 million to support state and local communities to address the expected continuing impacts of sea level rise, severe storms, and coastal flooding. The bill was not only supported by Governor DeSantis but also received unanimous bipartisan approval in both the Florida House and Senate. The comprehensive legislation provides:

- $12.5 million for coral reef protection and resilience efforts
- $29 million for planning programs
- $500 million for the Statewide Flooding and Sea Level Rise Resilience Plan[52]
- $100 million for local community-based projects starting in 2022

The Coastal Construction Control Line (CCCL) Program—Florida's equivalent of a coastal zone regulatory and permitting framework—uses an amalgamation of policies and statutory guidelines for coastal development and preservation to regulate structures and activities along Florida's coastal areas. Detailed regulations for coastal development are found in the Florida Administrative Code. Key sections include the following:

- Fla. Admin. Code Ann. r. 62B-26.001 (62B-26.001, F.A.C. et seq.). Describes the location of the CCCLs in the 35 coastal counties.
- Fla. Admin. Code Ann. r. 62B-33.002 (62B-33.002, F.A.C. et seq.). Sets out rules and procedures to obtain development permits for coastal construction seaward of the CCCL.
- Fla. Admin. Code Ann. r. 62B-36.001 (62B-33.002, F.A.C. et seq.). Outlines a series of guidelines for a far-reaching, statewide beach management strategy aimed at protecting Florida's critically eroded shoreline.
- Fla. Admin. Code Ann. r. 62B-41.002 (62B-41.002, F.A.C. et seq.). Contains the criteria and procedures for obtaining a coastal construction permit.

Further, effective July 1, 2021, Sea Level Impact Projection Study Standards require analysis of the following three elements for any state-financed coastal construction:

- 50 years (or structured life expectancy) of estimated sea level rise using the NOAA intermediate sea level rise scenario per the NOAA report[53]
- 1% risk (100-year storm) flood inundation, over 50 years or the expected structural life
- Risk to public safety and environmental impacts, including structural integrity[54]

52. Fla. Stat. Ann. § 380.093. 53. Global and Regional Sea Level Rise Scenarios for the United States. 54. *See* Fla. Admin. Code Ann. r. 62S-7.012 (62S-7.012, F.A.C.).

Fla. Stat. Ann. § 161.085(1) says that the "state recognizes the need to protect private structures and public infrastructure from damage or destruction caused by coastal erosion." Fla. Stat. Ann. § 161.085(2)(a) states, "Permits for present installations may be issued if it is determined that private structures or public infrastructure is vulnerable to damage from frequent coastal storms." And Fla. Admin. Code Ann. r. 62B-33.0051(1)(a) (62B-33.0051, F.A.C.) sets forth eligible structures for coastal seawalls and revetments. Additional thresholds center on vulnerability and frequent storm events as well as additional impacts due to adjacent armoring. The Administrative Code also provides exemptions for seawall gap-closure.[55]

As in California and other coastal jurisdictions, practitioners in Florida should identify and include an experienced and qualified geotechnical engineer in addressing coastal hazards and sea level rise impacts under Florida's regulatory regime for coastal development projects.

The New York Community Risk and Resiliency Act

The New York State Legislature passed the Community Risk and Resiliency Act (CRRA)[56] in June 2014, and New York Governor Andrew M. Cuomo signed the CRRA into law on September 22, 2014. The CRRA became effective on March 21, 2015, and applies to all applications and permits received after the adoption of guidance on the implementation of the CRRA but no later than January 1, 2017.[57] The bill was introduced to strengthen New York State's preparedness for the effects of climate change—specifically, to help protect communities against sea level rise.

Then, in July 2019, the New York State Climate Leadership and Community Protection Act (CLCPA) amended the CRRA. The CLCPA[58] addresses adaptation and resilience across state programming, land use planning, and local government support in addition to its climate mitigation goals, which include zero greenhouse gas emissions by 2050.

Consideration of Sea Level Rise, Storm Surge, and Flooding in Facility Siting, Permitting, and Funding

The CRRA amended three state statutes:

- The Environmental Conservation Law
- The Agriculture and Markets Law
- The Public Health Law

It required applicants for permits or funding in a number of specified programs to demonstrate that future physical climate risk due to sea level rise, storm surge, and flooding have been considered in project design. It also required that these factors be incorporated into certain facility-siting regulations.[59]

> As in California and other coastal jurisdictions, practitioners in Florida should identify and include an experienced and qualified geotechnical engineer in addressing coastal hazards and sea level rise impacts...

The CLCPA then amended the CRRA to include all permits subject to the Uniform Procedures Act and expanded the scope of the CRRA to require consideration of all climate hazards in these permit programs. Specifically, the CLCPA requires the New York Department of Environmental Conservation (DEC) to assess all reasonably foreseeable risks of climate change on any proposed projects and identify which risks are the most significant. Issues to be considered include

> sea level rise, tropical and extratropical cyclones, storm surges, flooding, wind, changes in average and peak temperatures, changes in average and peak precipitation, public health impacts, and impacts on species and other natural resources.[60]

55. Fla. Admin. Code Ann. r. 62B-33.0051 (62B-33.0051, F.A.C.). 56. 2014 N.Y. Laws 355. 57. 2014 N.Y. Laws 355 § 19. 58. 2019 N.Y. Laws 106. 59. 2014 N.Y. Laws 355 §§ 2-5, 9, 14, 14a, 15. 60. 2019 N.Y. Laws 106 § 17-a(a)-(b). 61. 2014 N.Y. Laws 355 § 2.

Note that the CRRA also added consideration of climate-related risks to the criteria state infrastructure agencies must consider in funding public infrastructure projects.[61]

Local Governments

As to local governments, the CRRA does the following:

- Requires the New York State Department of State (DOS) to work with the DEC to develop model climate change adaptation zoning laws to help municipalities incorporate measures related to future physical climate risks into their local laws.[62] Adoption of the model laws is voluntary.[63]
- Provides funding on a competitive basis, subject to appropriation, to municipalities for local waterfront revitalization planning projects that mitigate future physical climate risks (Eligible costs include "planning, studies, preparation of local laws, and construction projects."[64] However, the CRRA allows the imposition of "contractual requirements and conditions upon any municipality which receives state assistance payments" under N.Y. Envtl. Conserv. Law § 54-1101 "to ensure that a public benefit shall accrue from the use of such funds by the municipality."[65] This includes demonstrating that the municipality has considered "future physical climate risk due to sea level rise, and/or storm surges and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data if applicable.")[66]
- Allows the Commissioner of Environmental Conservation to provide, on a competitive basis and subject to appropriation, assistance payments to municipalities or not-for-profit corporations toward the cost of any coastal rehabilitation projects, provided that the Commissioner of Environmental Conservation determines that future physical climate risk due to sea level rise, storm surges, and/or flooding has been considered.[67]
- Allows the Commissioner of the Office of Parks, Recreation and Historic Preservation to enter into maintenance and operation agreements for open space land conservation projects in urban areas or metropolitan park projects with municipalities, not-for-profit corporations, and unincorporated associations, if the project demonstrates consideration of future physical climate risk due to sea level rise, storm surges, and/or flooding.[68]

62. 2014 N.Y. Laws 355 § 14. 63. *Id.* 64. 2014 N.Y. Laws 355 §10. 65. *Id.* 66. *Id.* 67. 2014 N.Y. Laws 355 § 11. 68. 2014 N.Y. Laws 355 § 7.

The CRRA also applies to the Commissioner of Agriculture and Markets' evaluation of applications for state funding for local farmland protection programs,[69] the Commissioner of Health's evaluation of applications for state funding for drinking water projects,[70] and DEC's consideration of applications for certain major projects, including applications for permits under the following programs:

- Protection of waters
- Sewerage service for realty subdivisions
- Liquified natural and petroleum gas
- Mined land reclamation
- Freshwater wetlands
- Tidal wetlands
- Coastal erosion hazard areas[71]

The CRRA further requires the DEC to:

- Adopt regulations establishing science-based sea level rise projections by January 1, 2016, and to update those projections every five years
- In consultation with DOS, to provide guidance to state agencies on the implementation of the CRRA, including the use of "resiliency measures that utilize natural resources and natural processes to reduce risk"[72]

The DEC released four guidance documents for the implementation of the CRRA:

- Using Natural Measures to Reduce the Risk of Flooding and Erosion, which describes natural resilience measures and their uses for reducing risks associated with erosion and flooding
- New York State Flood Risk Management Guidance, which presents recommendations to state agencies on considering flood risk in planning and project implementation
- A guide on Estimating Guideline Elevations, which presents the principles introduced in the New York State Flood Risk Management Guidance to assist planners, engineers, designers, and architects in flood mitigation project design -and-
- Guidance for Smart Growth Public Infrastructure Assessment, which provides general principles of climate risk mitigation that state agencies should follow L

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RESEARCH PATH: ***Construction > Planning and Preliminary Considerations > Practice Notes***

69. 2014 N.Y. Laws 355 § 12. 70. 2014 N.Y. Laws 355 § 13. 71. 2014 N.Y. Laws 355 § 15. 72. 2014 N.Y. Laws 355 § 16-17.

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Climate Change Legislation and Construction: Lessons from Colorado

Colorado is nationally recognized as one of the leading states in the battle against climate change. As more states and localities consider climate change legislation, it can be helpful to look to Colorado as a possible bellwether.

THIS ARTICLE FOCUSES ON RECENT COLORADO CLIMATE laws passed at both the state and local level that have or will impact construction industry participants at nearly every level of the construction process, particularly those involved in the buildings sector.

This article is not intended to provide a detailed exposition of the myriad ways the effort to reduce greenhouse gas emissions (GHG) affect the construction industry or the building segment of the industry. Instead, it is intended as an introduction to the subject matter. Many statutes and programs mentioned in this article could easily be the subject of separate, lengthy articles and presentations. Of note, this article is a snapshot of the subject as of the time it was written. Further developments may increase or ameliorate the effects of climate-change initiatives, and it is unwise to speculate as to how the GHG-reduction picture will change and evolve even over the near term.

Background

Many of Colorado's recent climate laws are a byproduct of its lofty goals to curb GHG emissions established in 2019 through HB 19-1261, which set forth goals to reduce statewide GHG emissions from the 2005 levels by 26% in 2025, 50% in 2030, and 90% in 2050.[1] Since the passing of HB 19-1261, state and local legislatures and governmental agencies have established laws and enacted policies that impact nearly every sector and industry in the Colorado economy, including the construction industry.

Operational v. Embodied Carbon

Two primary sources of carbon are associated with the building industry: embodied and operational. Embodied carbon refers to the amount of GHG utilized in the manufacturing, transporting, installing, maintenance, and disposal of building materials and byproducts, while operational carbon refers to the GHG resulting from a building's energy consumption.

Many of Colorado's recent climate laws have focused on reducing operational carbon, primarily through constructing high-performance buildings or retrofitting old ones to achieve net-zero results. This is not surprising when considering that operational carbon is generally viewed as the more immediate threat because it contributes more to global GHG emissions than embodied carbon and is less difficult to mitigate through the legislative process. Governmental measures to mitigate embodied carbon require more targeted legislation focusing on a wider array of construction activities, including raw material extraction, fabrication, delivery, and removal, to list just a few, which requires more time, resources, data, and participation to enact meaningful and lasting change. While the state has already begun efforts to combat the impacts of embodied carbon associated with the construction industry, it is reasonable to assume, especially given Colorado's track record, that more restrictive measures will be forthcoming.

The Built Environment

By present estimation, Colorado has approximately 6 billion square feet of commercial and residential buildings. To meet the lofty goals set forth by the state legislature in 2019, many of these buildings will need to decrease their GHG output dramatically.

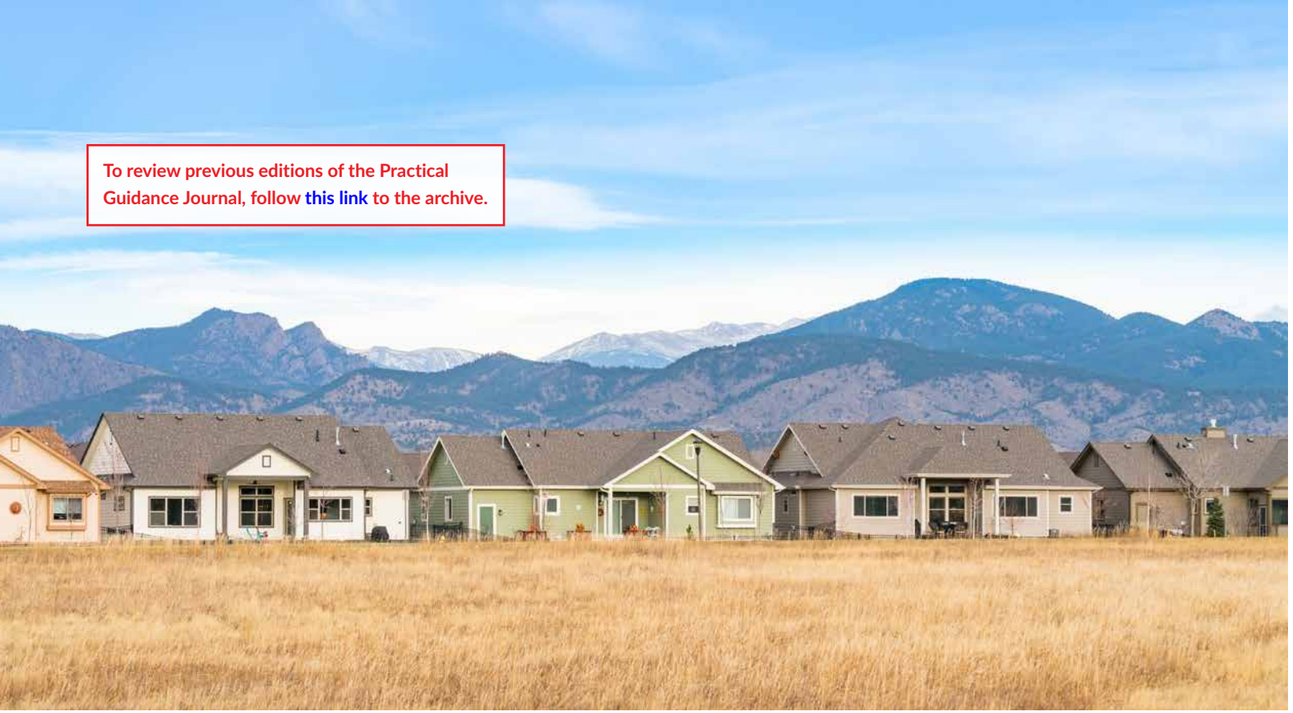
Recent legislation in Colorado related to curbing GHG emissions in existing buildings has focused on first measuring a building's energy consumption, a process also known as benchmarking. The thought is that by creating benchmarking programs, which require building owners to report a building's overall energy use annually, those owners can better evaluate savings opportunities and prioritize investments in efficiency upgrades. In addition, local jurisdictions can better assess a building's progress towards meeting GHG reduction deadlines and enforce penalties for non-compliance accordingly.

Colorado took its first step at establishing a statewide benchmarking program when it enacted HB 21-1286 in June 2021.[2] This bill requires owners of large commercial, multifamily, and public buildings of 50,000 square feet or more to report annual energy use to the Colorado Energy Office (CEO), with an initial reporting deadline of December 1, 2022. Additionally, the bill directed the CEO to appoint a building performance standards task force to meet sector GHG reduction targets of 7% by 2026 and 20% by 2030, below 2021 levels. The task force reported its recommendations to the CEO and the state Air Quality Control Commission (AQCC) in October of 2022.[3] AQCC plans to establish formalized rules in 2023.

The City of Denver has gone a step further with the city council's approval of what has been dubbed the Energize Denver Ordinance, which establishes an overall target goal of achieving net zero GHG emissions for commercial and multifamily buildings—the city's largest source of GHG emissions—by the end of 2040.[4] The ordinance requires that owners of covered buildings with a gross floor area equal to or greater than 25,000 square feet to meet targeted energy use intensity (EUI) standards for that building type such that by 2030 the entire spectrum of covered buildings can achieve 30% total energy savings.[5]

Understanding that not all buildings start at the same point, the ordinance adopts a trajectory approach wherein each building will be subject to differing interim performance levels based on that building's current energy usage and the final standards established for that building type. A baseline EUI is set for each covered building based on its 2019 energy use. Interim targets are then determined based on that building's baseline EUI and the final EUI standard for that building type for the year 2030. Buildings starting from a lower baseline EUI will, therefore, have less stringent performance improvement requirements than those starting from a higher baseline EUI. The Office of Climate Action, Sustainability, and Resiliency (CASR) will establish interim energy performance targets for each covered building for 2024 and 2027. To establish the interim performance standards that each building will be required to achieve, the CASR will draw a straight line from the building's EUI baseline to the final EUI standard established for

1. *See* 2019 Bill Text CO H.B. 1261. **2.** *See* 2021 Bill Text CO H.B. 1286. **3.** The task force's recommendations and background information can be found at Colorado Energy Office, Building Performance Standards. **4.** *See* Denver, Colorado Code of Ordinances Sec. 10.401 et seq. **5.** Covered buildings are defined under the ordinance as any commercial or multifamily individual building in the City and County of Denver with the exceptions noted in Denver, Colorado, Code of Ordinances Sec. 10.400(d)(1).



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that building type for 2030. Owners of buildings subject to the ordinance are required to report on an annual basis the energy performance information for that building to the CASR. By establishing interim targets, the trajectory approach provides owners of covered buildings with the information necessary to understand where a building's performance level needs to be and the time frame by which an owner can adopt incremental improvements to achieve those milestones, thereby defraying the costs in doing so over time.

For owners of covered buildings with 5,000 to 24,999 square feet, the ordinance requires that owners either (1) certify that they have installed all LED lights or that they have achieved an equivalent lighting power density to what all LEDS would have resulted in or (2) install solar panels or purchase off-site solar that generates enough electricity to meet 20% of the building's annual energy usage. Owners of these covered buildings must comply with the requirements by either 2025, 2026, or 2027, based on the building's overall square footage.

New Developments

One of the primary policy solutions to reducing GHG in future development is through statewide or local building code amendments. Policies that effectuate forward-looking change are typically easier to establish than those looking to modify the existing landscape. The same is true for green initiatives related to new construction or major renovations, where local legislatures and governmental agencies look to effectuate meaningful change in their respective communities' reliance on fossil fuels.

In a majority of states throughout the nation, building codes are established at the state level, requiring the local municipalities to adopt codes that are no less stringent than those required by the state. However, Colorado is a home-rule state, and therefore codes are adopted and enforced at the local level. Thus, there is a real question as to whether the Colorado General Assembly has the constitutional authority to mandate the adoption of statewide green building codes by home-rule municipalities.

Notwithstanding the constitutional implications, and to meet the state's goal of achieving net zero GHG, the state legislature passed HB 22-1362,[6] which requires the development of statewide model codes to be adopted and enforced by state agencies and local governments. The bill mandates certain agencies to work in consultation to formulate an energy code board tasked with developing two sets of model codes that will later be adopted by local governments and state agencies, including a model electric and solar-ready code by June 1, 2023, and a model low energy and carbon code by July 1, 2025. Additionally, the bill requires that the CEO identify model green code language for adoption by counties, municipalities, and state agencies.

6. *See* 2022 Bill Text CO H.B. 1362.

By utilizing the state's purchasing power to encourage private companies to reduce emissions to stay competitive in the Colorado bidding process, Buy Clean Colorado attempts to incentivize private companies to enact practices and invest in technologies that will reduce emissions for the processing, transportation, and installation of materials to be utilized in private projects as well.

While the bill leaves much discretion to the board in developing the model codes for adoption, it does mandate certain requirements that the codes must include for new developments, including, but not limited to, infrastructure requirements for electric-vehicle charging stations and solar panels. To be clear, the bill does not require the updated codes to include mandates prescribing that each new building construction project incorporate fully operational charging stations and solar panels, only the infrastructure necessary to add such features, such as adequate space to add charging stations and the conduit systems necessary to support their installation.

Once the board adopts the model codes, the act prescribes deadlines by which local municipalities and counties and state agencies will have to adopt and enforce the codes. Developers, design professionals, and contractors of all tiers should be aware of these deadlines and act accordingly.

Denver and a few other local municipalities in the state are already ahead of the curve, establishing model codes that already exceed those expected to be adopted by municipalities under HB 22-1362. In 2018, Denver enacted the Green Buildings Ordinance requiring owners of new developments of 25,000 square feet or more to select from options that would incorporate green initiatives into the building's overall plans, including the installation of green roofs and/or green spaces, installation of on-site solar panels, or the purchasing of off-site solar energy, to list a few.[7] (The ordinance also applies to roof permits for existing buildings 24,000 square feet or more and building additions of 25,000 square feet or more.) In early 2023, Denver is expected to update its 2019 building and green codes with the new building and fire codes to incorporate the 2021 series of international codes. Denver's code amendments will likely be effective as of March 1, 2023.

Buy Clean

As mentioned above, embodied carbon is broadly defined as the amount of GHG emissions associated with the construction of a building or project, including the energy used in extracting, transporting, manufacturing, and installing materials. Certain materials commonly used in nearly all construction projects, such as cement, which is utilized in concrete production, require an energy-intensive manufacturing process. Cement manufacturing is widely considered one of the largest contributors to global emissions.

Some of Colorado's GHG emission-reduction programs and policies had failed to adequately account for the operational emissions associated with the overall construction process. This changed in 2021 with the passage of HB 21-1303, titled Global Warming Potential for Public Project Materials, more commonly referred to as the Buy Clean Colorado act.[8] Buy Clean Colorado promotes the purchase of construction materials and products with lower embodied GHG emissions, taking into account the lifecycle emissions associated with the production of those materials. The act mandates the Office of the State Architect and the Department of Transportation to establish policies for the recording and tracking of GHG emissions for certain eligible materials, including asphalt, cement, and steel, amongst others, with the Office of the State Architect to perform benchmarking that establishes the acceptable global warming potential for each eligible material. The law requires that contractors bidding for public projects submit environmental product declarations (EPDs), which some have referred to as nutrition labels for materials. EPDs will help the agencies assess the environmental impact of an eligible material through the lifecycle of that material and, therefore, assist the state in purchasing materials for public projects that are processed with lower amounts of embodied carbon.

By utilizing the state's purchasing power to encourage private companies to reduce emissions to stay competitive in the Colorado bidding process, Buy Clean Colorado attempts to incentivize private companies to enact practices and invest in technologies that will reduce emissions for the processing, transportation, and installation of materials to be utilized in private projects as well.

7. Denver, Colorado Code of Ordinances Sec. 10.301. 8. *See* 2021 Bill Text CO H.B. 1303.

Several other states, including California, Minnesota, and Oregon, have also enacted Buy Clean acts to promote the use of materials with a smaller carbon footprint on state-funded projects. In addition, through the Federal Buy Clean Initiative,[9] the federal government is now taking steps to prioritize the use of American-made, lower-carbon construction materials on federally-funded projects. States with their own Buy Clean statutes are benefiting, and will continue to benefit, from the federal initiative through funding support and collaboration. For instance, the Department of Transportation recently announced that 25 states, including Colorado, will receive grants to support sustainable pavements.

Looking Ahead: Advice for Owners, Developers, and Design Professionals

Owners and developers should be mindful of these green initiatives and budget accordingly. Advocates of green initiatives believe that the upfront costs, if any, associated with either retrofitting existing buildings or constructing new buildings to comply with the current legislation and regulatory requirements will be outweighed by the long-term returns. But, for owners and developers who are already dealing with the inflationary state and rising material and labor costs, it may be difficult to see the proverbial forest through the trees. Moreover, they should be even more vigilant in reviewing contracts with project participants. Given the ever-changing landscape and the unknown, it is crucial for owners and developers to appropriately account for the risks associated with adhering to evolving laws, rules, and regulations through careful contract drafting and negotiation. The American Institute of Architects (AIA) has created a suite of sustainable contract documents to better define the roles and obligations of project participants in achieving a project's sustainability requirements. In addition, the AIA has recently updated its Guide for Sustainable Projects—a resource which contains information on topics such as materials transparency, resilience, and EPDs, and includes example sustainability plans for LEED, WELL, and the International Green Construction Code.

9. U.S. Council on Environmental Quality, Office of the Federal Chief Sustainability Officer, Federal Buy Clean Initiative.

Design professionals, especially those with a cross-jurisdictional practice, need to remain apprised of the applicable laws and ensure they are not contracting to expand their duty of care beyond the common law standard of care. Often owners will attempt to contract for the design professional to perform above the common law standard of care. For instance, design professionals should be wary of contracts that require them to comply with all applicable laws, rules, and regulations. On the one hand, strict compliance may be impossible because applicable codes or laws often contradict one another and are otherwise constantly evolving. On the other hand, strict compliance exceeds the standard of care that would typically be insurable under a professional liability insurance policy. While avoiding contracting for an expansive standard of care should be a rule of thumb for every design professional in nearly every scenario, it is often secondary to executing the deal. However, with the evolving legislative and regulatory framework brought forth by the climate-change initiatives, design professionals must remain steadfast in the contracting phase to ensure they are not opening themselves to uninsurable liability. Moreover, design professionals should be adept in evolving their practices to meet the new demands of the green movements. Now, more than ever, owners and developers are seeking new and innovative ways to mitigate a project's overall footprint and create sustainability. Staying ahead of the curve by investing in the labor and technology necessary to meet these demands will only make a design firm more attractive to a wider array of clientele.

Leaders in the building construction industry should stay apprised of, and even participate in, the ever-changing and expanding landscape of statutes, codes, and rules that continues to impact the design and construction of buildings of all types including public and private, commercial, industrial, and residential. In Colorado, one way of staying up to speed is to register for the email lists established by state and some local jurisdictions, such as the Air Quality Control Commission,[10] the Colorado Air Pollution Control Division,[11] and the Energize Denver program.[12]

Related Content

For an overview of California climate change legislation that impacts the construction industry, see

CLIMATE CHANGE LEGISLATION TRACKER (CONSTRUCTION) (CA)

For assistance in locating and tracking New York climate change legislation that impacts the construction industry, at the state level and in New York City, see

CLIMATE CHANGE LEGISLATION TRACKER (CONSTRUCTION) (NY)

For a tracker that provides direct links to source text, dates enacted, and descriptions of developments to Ohio climate change legislation that impacts the construction industry, see

CLIMATE CHANGE LEGISLATION TRACKER (CONSTRUCTION) (OH)

For a collection of Practical Guidance resources addressing climate change, see

CLIMATE CHANGE RESOURCE KIT

For a list of the of the resources available in Practical Guidance addressing ESG issues, see

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) RESOURCE KIT

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10. Air Quality Control Commission meeting information and commission calendar. 11. Colorado Air Pollution Control Division mailing lists. 12. Energize Denver Hub.

Stephen Del Percio AECOM

California's Sweeping Climate Change Initiative Will – Eventually – Have Profound Impacts on the Built Environment

National governments globally are struggling to enact legislation that will bind them to the world's carbon dioxide and other greenhouse gas emissions reduction targets, and unfortunately in some cases even reach consensus on the scope and scale of the climate crisis—let alone deciding what must be done.

BUT THANKS TO A MASSIVE NEW PIECE OF RECENT LEGISLATION, California has stepped squarely into the global climate leadership void by pledging to become entirely carbon neutral by 2045—an aggressive goal, to be sure, that will have dramatic repercussions for the Golden State's built environment over the next few decades. This article provides an overview of what has been dubbed the California Climate Commitment, highlighting the components of the legislation that will most impact construction, real estate, and infrastructure in the world's fifth largest economy.

Governor Gavin Newsom signed this sprawling set of laws on September 22, 2022, fresh on the heels of a separate $308 billion state budget he signed in June that allocated $54 billion to climate. That budget directed $6.1 billion in spending on electric vehicles (including battery-powered school buses and EV-charging infrastructure); $14.8 billion for transit and port projects (including the California High Speed Rail initiative, a project which is slowly advancing in the state's Central Valley); $8 billion for electric grid stabilization; $2.7 billion on wildfire mitigation; and $2.8 billion on water projects. Coupled with the Climate Commitment, these efforts are positioning California at the vanguard of climate action, which (as is frequently the case with Golden State legislative accomplishments) will likely wend their way into legislation in other jurisdictions, making

their review just as salient for observers and practitioners in those geographies, too.

The California Climate Commitment is actually the compilation of 40 separate bills addressing a broad range of climate-related topics, from EVs and embodied carbon in building materials to oil drilling regulations. According to the governor's office, it will create four million new jobs, cut air pollution by 60%, reduce the state's consumption of oil by 91%, cut refinery pollution by 94%, and prevent $23 billion in environmental degradation from pollution. Critically, the legislation is also projected to reduce the use of fossil fuels in buildings and transportation by 92%.

In terms of impact on the built environment and implications for real estate, there are several bills within the Climate Commitment that should be of particular interest to California's construction, real estate, and infrastructure industries: AB 1389[1] (Clean Transportation Program); AB 2061[2] and AB 2075[3] (setting standards for the electrification of buildings and developing/deploying EV charging networks); AB 2446[4] (Embodied Carbon Emissions: Construction Materials); SB 379[5] (Residential Solar Energy Systems; Permitting); and SB 905[6] (Carbon Sequestration; Carbon Capture, Removal, Utilization, and Storage Program).

But the heart of the Climate Commitment are AB 1279[7] (California Climate Crisis Act), and SB 1020[8] (Clean Energy, Jobs, and Affordability Act of 2022). These two laws establish as state policy the achievement of net-zero greenhouse gas emissions by no later than 2045, maintenance of net negative emissions from that point forward, and net emissions reductions of 85% from 1990 levels by 2045. SB 1020 also creates interim milestones, targeting a 90% clean electricity grid by 2035, 95% by 2040, and 100% clean retail electricity sales by 2045.

Here is a closer look at each of these key pieces of the Climate Commitment, which are likely to have the most impact on the state's built environment and development patterns over the next few decades.

AB 1279: California Climate Crisis Act.[9] In addition to the emissions reduction targets noted above and set forth in SB 1020, this law gives the California Air Resources Board (CARB) a broad mandate "to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California." (The California Global Warming Solutions Act of 2006 had previously designated CARB as the state agency responsible for monitoring and regulating the various sources of greenhouse gases in California.)

SB 1020: Clean Energy, Jobs, and Affordability Act of 2022.[10] The headline bill for the Climate Commitment, this piece of legislation is what mandates carbon neutrality for the entire state by 2045. By December 31, 2035, 90% of all retail electricity sales to end users in California must come from renewable and/or carbon neutral resources; by December 31, 2040, that figure rises to 95%. For California state agencies, the requirements are even more stringent; all electricity they use must be clean or carbon-neutral by December 31, 2035. SB 1020 goes a step further by mandating certain requirements for any new procurement commitments made by state agencies for new clean energy capacity after June 1, 2022. For example, it requires those commitments to be tied to new facilities that must enter commercial operation after January 1, 2023. It also directs project labor agreements for the construction of those new facilities and further requires agencies "to give preference to resource options expected to yield maximum long-term employment, stimulate new economic activity, generate local and state tax revenues, and assist with the development of new industries."

AB 1389: Clean Transportation Program: Project Funding Preferences.[11] This law requires California's existing Clean Transportation Program (which provides competitive grants, revolving loans, and other funding to, among other things, transit fleet owners, businesses, and public-private partnerships) to develop and deploy innovative technologies and alternative and renewable fuels in the marketplace. The amendment incorporates a list of criteria that the State Energy Resources Conservation and Development Commission must use to evaluate projects slated to receive more than $75,000 from the Commission. These include a project's ability to "drive new technology advancement for vehicles . . . and promote the deployment of that technology in the marketplace." It also outlines 13 different types of projects that are eligible for funding, including "infrastructure projects that promote alternative and renewable fuel infrastructure development connected with existing fleets, public transit, and existing transportation corridors." For example, these types of projects could potentially include "on-demand," software-powered shared transit applications or micromobility solutions such as e-bikes and scooters.

AB 2061: Transportation Electrification: Electric Vehicle Charging Infrastructure.[12] This statute requires the State Energy Resources Conservation and Development Commission to develop uptime recordkeeping and reporting standards for electric-vehicle chargers and charging stations by January 1, 2024. (While California has already spent billions subsidizing EVs generally, including charging stations, it has not collected data on how that infrastructure is performing.) The law also amends existing California transportation electrification laws, which require the state's public utilities to reduce greenhouse gas emissions to 40% below 1990 levels by 2030 and to 80% below 1990 levels by 2050. However, AB 2061 only applies to EV chargers and charging stations that receive incentives from the state.

1. 2021 Bill Text CA A.B. 1389. 2. 2021 Bill Text CA A.B. 2061. 3. 2021 Bill Text CA A.B. 2075. 4. 2021 Bill Text CA A.B. 2446. 5. 2021 Bill Text CA S.B. 379. 6. 2021 Bill Text CA S.B. 905. 7. 2021 Bill Text CA A.B. 1279. 8. 2021 Bill Text CA S.B. 1020. 9. 2021 Bill Text CA A.B. 1279. 10. 2021 Bill Text CA S.B. 1020. 11. 2021 Bill Text CA A.B. 1389. 12. 2021 Bill Text CA A.B. 2061.

AB 2075: Energy: Electric Vehicle Charging Standards.[13] This statute directs relevant state agencies (including the California Building Standards Commission and the Department of Housing and Community Development) to develop and publish guidance and best practices in order to help building owners, the construction industry, and local governments "overcome barriers" to the electrification of buildings and EV charging equipment. This guidance includes replacement of common fossil fuel–powered equipment within buildings; whole building electrification plans; and model permit applications for building electrification, storage, and EV charging installation projects. AB 2075 also requires the state Energy Commission to adopt, approve, and codify mandatory building standards for the installation of EV-charging infrastructure for parking spaces in multifamily residential and non-residential development. (Interestingly, the Commission is directed to use the existing California Green Building Standards Code as the starting point for establishing these standards, and AB 2075 will ultimately complement similar standards that exist for energy efficiency, water efficiency, and rooftop solar installations.)

AB 2446: Embodied Carbon Emissions: Construction Materials.[14] The California Global Warming Solutions Act of 2006 had previously directed CARB to monitor and regulate sources of emissions of greenhouse gases in California. AB 2446 goes a step further by requiring the Board to develop, by July 1, 2025, a framework for calculating the average carbon intensity of building materials used in new construction. This reduction must occur against a baseline calculated from a report to be produced by 2026. From there, it will require the state's building industry to reach a 40% reduction in greenhouse gas emissions from those building materials by December 31, 2035 (with an interim 30% reduction required by that same date in 2030). That framework must include a requirement for "entities undertaking the construction" of projects larger than five new residential units or 10,000 square feet of nonresidential building space to submit a life-cycle assessment of the carbon intensity of the project's building materials. The bill acknowledges California's struggles to develop new housing units ("California is currently facing a housing shortage") but that meeting the state's housing goals "should not come at the expense of California's climate goals. It is the responsibility of the state to find solutions that allow housing and climate targets to reinforce one another."

> ...it is inevitable that certain pieces of the Climate Commitment will ultimately have a larger impact on the construction, real estate, and infrastructure industries than others.

13. 2021 Bill Text CA A.B. 2075. 14. 2021 Bill Text CA A.B. 2446.

Related Content

For a collection of Practical Guidance resources addressing climate change, see

CLIMATE CHANGE RESOURCE KIT

For a review of environmental considerations when selling or purchasing real estate, see

ENVIRONMENTAL CONSIDERATIONS IN REAL ESTATE TRANSACTIONS RESOURCE KIT

For an overview of environmental impact reviews, see

ENVIRONMENTAL IMPACT REVIEW IN REAL ESTATE TRANSACTIONS

For a list of the of the resources available in Practical Guidance addressing ESG issues, see

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) RESOURCE KIT

For a discussion of the legal and policy framework for addressing sea level rise, see

SEA LEVEL RISE: A GUIDE FOR PUBLIC AND PRIVATE PROJECTS

For guidance in navigating the California Environmental Quality Act, see

CALIFORNIA ENVIRONMENTAL QUALITY ACT COMPLIANCE

SB 905: Carbon sequestration: Carbon Capture, Removal, Utilization, and Storage (CCUS) Program.[16] This statute directs CARB to establish this program, which by January 1, 2025, must adopt regulations for a unified permit application governing the construction and operation of carbon dioxide capture, removal, and sequestration projects. These projects are defined in the law as projects that use "a process to separate carbon dioxide from industrial, commercial, or energy-related sources, other than oil or gas production from a well, and produces a concentrated fluid of carbon dioxide with the intent of preventing emission of the carbon dioxide into the atmosphere" or carbon dioxide capture or removal projects that "seek to provide for the long-term isolation or utilization of the carbon dioxide from the atmosphere through storage in a geologic formation." But implementing this law will be a challenge; California has yet to open a CCUS facility and environmental groups in the Central Valley are actively—and vehemently—opposing multiple CCUS applications pending before the EPA (with at least a dozen more in the pipeline as of June of 2022).[17]

SB 379: Residential Solar Energy Systems: Permitting.[15] This law requires every California city, county, or city and county to launch an online automated permitting platform for residential solar systems (up to 38.4 kilowatts). Only cities with fewer than 5,000 in population and counties with fewer than 150,000 in population are exempt. The state's justification is that, in order for California to reach its climate goals, it will ultimately need to generate six gigawatts of electricity from renewable energy sources per year, while also building out complementary storage capacity. Streamlining the permitting process for rooftop solar should make it easier for residential homeowners to install these types of systems, helping to boost the state's overall renewable capacity.

15. 2021 Bill Text CA S.B. 379. 16. 2021 Bill Text CA S.B. 905. 17. Center for Biological Diversity, *EPA Urged to Reject Carbon Capture Projects in Central California* (June 29, 2022).

What Do These Laws Mean for California's Construction, Real Estate, and Infrastructure Industries?

Eventually they will be transformative. But in the short term the Climate Commitment will remain in essence a mandate for a variety of California regulatory agencies. Practitioners and industry observers will therefore need to keep a close eye on it as the teeth of the legislation is hammered out in the halls of Sacramento. Indeed, its open-ended, aspirational structure has been one of the criticisms of the Climate Commitment, which echoes similar critiques of the federal Infrastructure Investment and Jobs Act (IIJA), the Biden administration's infrastructure bill, which the president signed in November of 2021, creating more than 125 new grant programs, but whose funding has rolled out slowly.

Nevertheless, it is inevitable that certain pieces of the Climate Commitment will ultimately have a larger impact on the construction, real estate, and infrastructure industries than others. For example, AB 2446[18] takes the existing Buy Clean California Act of 2017, which required contractors bidding on public projects to disclose data about embodied carbon in certain materials, including glass and steel, a step further, mandating that project teams prepare a full life-cycle analysis of embodied carbon for all new building materials. (This means that all of the greenhouse gas emissions caused by those materials' manufacture, transportation, installation, maintenance, and ultimate disposition must be accounted for in the analysis, ultimately creating a significant compliance hurdle for every real estate development and construction project.)

It is also important to consider the Climate Commitment in context: today, 41% of California's greenhouse gas emissions come from automobiles (compared to 27% of the rest of the country's). The goals of the Climate Commitment should thus be viewed in significant part from that perspective; reaching its goal of carbon neutrality by 2045 will require California to wage in an outsized effort at reducing the climate impacts of the car.

To that end, in September, the California Energy Commission—together with Caltrans, the California Department of Transportation—announced that it had reached an agreement with the federal government to tap $56 million in funds from the IIJA in order to begin installing EV-charging stations.[19] This is just a first step towards meeting the Climate Commitment's goal of creating a 6,600-mile network of chargers across the state by 2030. That network will eventually include 1.2 million EV chargers for light-duty cars and 157,000 chargers for medium- and heavy-duty vehicles, to be installed in both public locations (parks, shopping centers, hotels, etc.) and private, but shared, locations in multifamily residential buildings and workplaces.

18. 2021 Bill Text CA A.B. 2446. 19. Caltrans, *Federal Funding to Help California Expand Electric Vehicle Charging Network* (Sept. 19, 2022).

> ...California will increasingly need to deploy innovative project delivery methods in order to reach the Climate Commitment's carbon-neutral goals.

Ultimately, the state will receive $384 million from IIJA over the next five years, complementing the $10 billion that the governor's 2022 budget previously allocated to EVs. Yet much more funding will likely be necessary if California is to follow through on its ban of the sale of any new fossil fuel-powered automobiles by 2035, as CARB voted for in August of 2022.

Yet if every existing gas-powered car in use in the United States was instantly swapped out for an EV or ZEV (zero-emission vehicle), and Americans drove as much as they do today, the country's electricity demands would increase in kind dramatically, by nearly 30%.[20] The Climate Commitment recognizes this reality and, controversially, also includes a provision extending the life of the Diablo Canyon Nuclear Power Plant for another five years. (In 2018, the California Public Utilities Commission had voted to shut down the plant, which features two 1.2 gigawatt generators.) But this component of the Climate Commitment underscores the reality of California's climate ambitions. While it is critical that we stop burning fossil fuels, electrify our transportation networks, and make the transition to a clean economy, electricity must still come from somewhere. And renewable energy sources face challenges—from the intermittent nature of how they are generated to questions over the efficacy of their storage—all of which are thorny political and practical problems to solve at scale.

Still, in December 2022, the Biden administration took a step towards helping California meet those challenges head on. It announced that the Bureau of Ocean Energy Management (BOEM) would hold the first-ever Pacific Ocean offshore wind farm lease auction for floating wind turbines that could eventually generate 4.5 gigawatts of clean wind power (a significant portion of the additional six gigawatts of renewable power that the state needs to meet the Climate Commitment's goals). BOEM has already held 10 competitive auctions and issued 27 wind leases on the East Coast, but this will be the first on the West Coast, covering nearly 375,000 acres in five continental shelf areas off the coasts of central and northern California.[21]

Finally, from EV charging to carbon capture and sequestration to renewable energy projects, it is likely that California will increasingly need to deploy innovative project delivery methods in order to reach the Climate Commitment's carbon-neutral goals. These types of methods—including collaborative contracting methods like public-private partnerships (P3s), progressive design-build, and pre-development/progressive P3s—are proliferating nationally for a variety of reasons, including a lack of underlying technical expertise within the agencies charged with executing large and complex infrastructure projects. For example, in addition to renewable energy systems, EV-charging networks and CCUS concepts in particular have attracted significant interest from investors who are experienced in project finance because these asset classes have the potential to create their own funding sources (through user fees or carbon offtake arrangements). Leveraging their experience in developing an asset class, these investors will take those revenues from the asset once it is operating in order to pay back the loans and provide a return on the equity that was raised in order to design, develop, and construct the project in the first place.

We do not yet know what the impacts of climate change will hold for any of us. But it is a safe bet that the Climate Commitment will be fraught with fits, starts, and possibly even litigation over its more controversial elements as California begins to implement its vision for a carbon neutral future. For all of these reasons—and of course the health of our planet—it will be a critical piece of legislation to monitor closely in the months and years ahead.

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RESEARCH PATH: ***Real Estate > Commercial Purchase and Sales > Articles***

20. The Economist, *Green Gases Can Help in the Shift from Fossil Fuels to Electricity* (June 23, 2022). 21. U.S. Department of Labor, *Biden-Harris Administration Announces First-Ever Offshore Wind Lease Sale in the Pacific* (Oc. 18, 2022).

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Insuring for Climate Change: The Role of Parametric Insurance

This article addresses the topic of parametric insurance, a type of insurance that does not indemnify the pure loss, but *ex ante* agrees to make a payment upon the occurrence of a triggering event.

IT DESCRIBES PARAMETRIC INSURANCE, OUTLINES ITS origins and the operation of claims payment and trigger events, provides details about the coverage both in the United States and around the world, and explains the benefits and challenges of parametric insurance.

Parametric insurance is a new class of evolving index-based insurance products. An index-based insurance policy pays out claims based on a predetermined index, such as rainfall levels or wind speeds. It is called parametric insurance because policy parameters are set around a specific set of metrics. Unlike traditional insurance, parametric insurance does not indemnify the insureds against their actual losses. In fact, actual losses are nearly irrelevant to parametric insurance. Instead, parametric insurance protects insureds from the probability of a predefined event happening. For example, in the event of a hurricane, traditional insurance would pay an insured the value of the insured's covered and actual losses, but a parametric insurance policy would pay the claim based on whether the wind reached a certain speed, regardless of actual damages. Parametric insurance products exist for a wide variety of risks, and new products are constantly being developed to meet the needs of insureds, but typically, the risks covered by parametric insurance are those that have historically been difficult to insure—rare events that cause extreme losses.[1]

What Is Parametric Insurance?

The new class of evolving index-based insurance products known as parametric insurance is coverage tailored to the insured's specific risks. Parametric insurers currently operate under the same regulatory framework as traditional insurance insurers. While traditional insurance plans are most commonly annual, parametric insurance products are often multiyear plans of up to five years. Alternatively, some parametric plans are seasonal, operating to insure risks only during the hurricane season or drought cycle, for instance. Most parametric insurance products are written for commercial clients or governmental units and are bespoke contracts. Rather than selling a standard policy, most insurers work directly with the insured to develop a parametric insurance plan that is tailored to the specific risks of the insured. These are high-value, high-cost plans that often pay out millions of dollars. Parametric insurance is not meant to be the sole insurance policy for an insured; instead, it functions as a supplement to traditional insurance that increases liquidity immediately after a foreseeable and reasonably likely loss.

Origins of Parametric Insurance

Parametric products have existed in some form or another since the late 1990s and evolved from the practice of issuing catastrophe bonds, which are colloquially known as cat bonds. Cat bonds are risk-linked securities that transfer a specified set of risks from one party to investors and were developed after Hurricane Andrew and the Northridge earthquake led to the insolvency of several insurers. In many ways, cat bonds are like parametric insurance for insurers because they transfer the risk of catastrophic, high-damage natural disasters from the insurer to investors and are issued to complement traditional reinsurance. While some cat bonds pay the issuer based on actual losses, many pay out based on parametric triggers.

The evolution of parametric insurance from cat bonds is not well documented, perhaps in part because parametric policies are usually bespoke contracts created for individual commercial clients. One of the earliest documented instances of parametric insurance was not actually an insurance policy at all, but a full-fledged cat bond. It was issued to protect Disneyland Tokyo from earthquakes in April of 1999 and promised a $100 million payout if triggered. This bond utilized a parametric set of triggers where the park was enveloped by three concentric circles which were each assigned a trigger magnitude: 6.5 or more on the JMA scale in the inner circle, 7.1 in the middle circle, and 7.6 in the outer ring. The further away the earthquake epicenter was, the stronger the earthquake had to be to trigger a payout. (This framework where there are pre-agreed areas protected from given catastrophes is often referred to as cat-in-the-box).

The Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF) was developed eight years later as the first insurance instrument to successfully utilize parametric policies backed by both traditional and capital markets. Moreover, CCRIF was also the first regional risk-pooling fund to issue parametric insurance. CCRIF is organized as a nonprofit mutual insurance company, and originally it served the governments of 16 counties in the Caribbean. It was developed as a response to the damage caused by Hurricane Ivan, which devastated the region in 2004. The primary problem for the governments of these devasted countries was post-disaster liquidity—there was a gap between the exhaustion of emergency funds and the receipt of charitable donations, leaving governments struggling to provide essential services or begin the recovery process. The Caribbean Community (CARICOM) resolved to find a solution and petitioned the World Bank to assist them

1. *See* Steven L. Schwarcz, *Insuring the "Uninsurable": Catastrophe Bonds, Pandemics, and Risk Securitization*, 99 Wash. U. L. Rev. 853 (2021); Carolyn Kousky & Sarah E. Light, *Insuring Nature*, 69 Duke L.J. 323 (2019); and Hannah M. Petersen, *Parametric Payouts and Environmental Conservation: How a Tech-Based Insurance Policy Could Pave the Way for Economically Viable Conservation Efforts*, 20 N.C. J.L. & Tech. On. 75 (2018).

in designing and implementing a cost-effective means to transfer catastrophic risk. The primary goal of the program was to sustainably provide quick, short-term liquidity after natural disasters at a price that these governments could afford.

CCRIF utilizes parametric equations and data supplied by the National Hurricane Center and U.S. Geological Survey to determine coverage and calculate payments. The countries are divided into zones, and each zone is assigned its own parametric equation that gives weight to the zone's population size and the amount of governmental infrastructure. The weight assigned to the zone corresponds to a specified proportion of the government's risk exposure. Generating the government's gross loss (and its payment) merely consists of plugging in the data, such as wind speeds or earthquake magnitude, to the relevant zone's parametric equation. The aggregate of the zones' outputs comprises the ultimate payment, which can then be made immediately with no need to prove losses. CCRIF has been a remarkable success, making 54 payments totaling $245 million between its inception and 2022. The program expanded over the years to now cover 23 countries, including three Central American countries. It offers coverage for earthquakes, tropical cyclones, and excessive rainfall as well as special policies specifically designed to protect fisheries and electric utilities in the event of extreme weather. In the years since CCRIF was launched, there has been an explosion in the use of parametric insurance products.

Claim Payments

Claims payments are based on the magnitude of the specified trigger event, rather than the magnitude of the losses caused by the event. Payment values are calculated using predetermined parametric equations, a type of equation that employs an independent variable called a parameter in which dependent variables are defined as continuous functions of the parameter and are not dependent on another existing variable. This equation ties the payments to the index. As an example of how this equation functions, a policy might pay a certain amount per millimeter of cumulative rainfall above a certain threshold. Because parametric insurance is divorced from the actual losses of the insured, it may look like gambling in some respects, with premium payments serving as the equivalent of a bet that a certain event will happen. To differentiate parametric insurance from gambling, the United States requires that insureds show proof of some actual loss, though the value or magnitude of that loss is not relevant. The burden to prove actual loss is light though, and U.S. regulators have accepted minimal proof such as drone footage or text messages from customers describing the losses.

Trigger Events

For a parametric insurance policy to operate most effectively, the trigger event should be easily defined and verifiable by a reputable government organization. For instance, windspeeds make a good trigger event because insurers and insureds can easily and clearly define the metrics that will trigger a claim, and wind speeds can be reliably verified through the National Weather Service. The trigger event should also be directly related to the risk that the buyer seeks to protect against. For instance, a business near the coast might protect itself from hurricane damage by buying a parametric insurance product with high windspeeds as the trigger event while a farmer seeking protection from crop failure would want a policy with low levels of rainfall as the trigger event. The potential discrepancy between actual losses and claim payments is mitigated because insurers carefully design the trigger parameters so that if a trigger is met, the likelihood of actual losses is high.

The most efficient parametric insurance products use triggers that are tied to the location of the insured assets. This helps insureds and insurers establish trigger parameters that are consistent with the likelihood of actual losses. Some older models of parametric insurance differ though. With the cat-in-the-box or circle method, the policy is triggered if the eye of a named windstorm passes through a predetermined circle (or other geometry) around the insured asset and exceeds the intensity defined in the policy. Cat-in-the-box policies are high-risk for the insureds because they only consider the path of the storm and intensity at the center, leaving intact the risk from high windspeeds at the fringe of the storm. Another trigger method is the fixed anemometer policy, which pays claims based on whether a named windstorm exceeding certain speed passes by the anemometer nearest to the insured's asset. This method is also a high basis risk because anemometer stations are often miles away from the insured's assets. Despite their shortcomings, cat-in-the-box policies are still the most popular parametric insurance product to date.

So long as the triggers are objective, independently verifiable, transparent, and consistent, the only limit as to what may classify as a trigger is the imagination of the insurers and their insureds. Parametric insurance products have included triggers such as power outages, crop yields, and other intangible market factors. Some triggers may even be entirely peril-agnostic, such as a policy for a hotel that pays out whenever bookings or revenue drop below a certain threshold.

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After the economic devastation caused by the COVID-19 pandemic, business owners were distraught to learn that traditional insurance policies did not cover business interruption losses caused by pandemics. Shortly thereafter, the popularity of parametric pandemic policies exploded. Primarily, the trigger for these policies is the declaration of a health crisis by a government agency.

Parametric Insurance around the World

Since CCRIF showed the world just how efficiently parametric insurance can work, there has been an explosion in the amount and variety of parametric products offered globally. The majority of these new insurance products cover the risk of various natural disasters. In Japan, Swiss Re offers a parametric insurance product that protects corporations and public organizations from tsunamis. Started in 2011 as a response to the $210 billion in damages caused by the Tohoku tsunami, the policies pay out between $30 and $100 million within 40 days. The trigger event is the height of the waves. In addition, Swiss Re also developed a typhoon warning policy for Hong Kong businesses that is designed to mitigate business interruption risk by paying claims in the event of a typhoon warning of eight or higher. Note that the policy is triggered by the warning of a typhoon, not the typhoon itself. A sovereign risk pool similar to CCRIF, the Pacific Catastrophic Risk Insurance Company was launched in 2013 and provides Pacific Island countries with parametric insurance products covering tropical cyclones, earthquakes, and tsunamis.

Parametric insurance is not limited to natural disasters though. One particularly useful application is crop insurance. After French vineyards suffered significant losses in 2017 due to a severe drop in temperature, Mateo Protect began offering a parametric insurance product for vineyards that is triggered by low temperatures during the growing season. In Africa, World Food Programme's R4 Rural Resilience Initiative pays farmers based on a rainfall index. Parametric insurance products have also been developed for event organizers and retailers who might lose revenue in the event of rain or bad weather. Pandemic insurance was designed to help fund developing countries after the 2014 Ebola epidemic in West Africa. Once a covered virus reached a predetermined pandemic level, the claims would be paid.

Experimentation with parametric products has led to some novel applications as well. In 2018, the Mexican state Quintana Roo, the Nature Conservatory, and the reinsurance company Swiss Re partnered to develop a parametric insurance plan to protect the Mesoamerican Reef. This was the first parametric policy to be taken out on a natural resource. Wind speeds near the reef serve as the trigger event, and when the policy is triggered, an automatic payment is made to the local government so that it can begin repair and restoration of the reef right away.

Parametric Insurance in the United States

Adoption of parametric policy structures has been slow in the United States. In 2018, PathogenRX was offered by Marsh as a parametric pandemic insurance product, but not a single policy was sold. After the economic devastation caused by the COVID-19 pandemic, business owners were distraught to learn that traditional insurance policies did not cover business interruption losses caused by pandemics. Shortly thereafter, the popularity of parametric pandemic policies exploded. Primarily, the trigger for these policies is the declaration of a health crisis by a government agency. Other potential triggers include number of infections, hospitalizations, or deaths within a given locale.

Other insurance products offered in the United States cover a variety of risks, including windstorms, earthquakes, hail, too much rain, not enough rain, and crop failure. Parametric insurance is also popular in the construction industry where poor weather can delay projects. Though parametric insurance has not traditionally been a consumer product, the Innovation Workstream of the National Association of Insurance Commissioner Climate and Resiliency (Ex) Task Force has been conducting a study on the feasibility of using parametric insurance as a stop gap for low-income households, which may struggle under traditional plans offering high deductibles or low coverage limits. Additionally, there are a few insurers who do offer small-value parametric policies to consumers. In California, consumers can purchase up to $10,000 in parametric earthquake coverage, and in Florida and Hawaii, consumers can purchase parametric insurance products designed to help cover deductibles and excluded damages caused by hurricanes.

Parametric insurance is currently regulated in the same manner as traditional insurance. Most state and all federal codes and regulations make no explicit reference to parametric insurance. Only Tennessee mentions parametric insurance in its code, defining parametric insurance and stating that "any captive insurance company, except for a risk retention group, may provide parametric insurance policies, which are considered contracts of insurance for the purposes of this title."[2] However, several states have introduced bills related to parametric insurance, though none have passed. In 2017, Washington's state legislature considered creating a task force to evaluate innovative and standard approaches to disaster relief, including parametric insurance. Likewise, California is considering implementing a study to evaluate, among other things, heat index-triggered parametric insurance as a solution to local heat risks. Hawaii has also been considering the feasibility of parametric insurance as a means to mitigate climate change through various failed bills introduced since 2015. Puerto Rico is the only state or territory that has adopted regulations designed to foster parametric insurance. Raincoat administers these microparametric policies that pay out $1,000 less than 15 days after windspeeds trigger the policy.

Federally, Congress considered S.B. 3072 in 2017,[3] which recommended that the National Ocean Service assess whether parametric insurance has a role in proposals to protect coral reefs. Then in 2021, in the height of the COVID-19 pandemic, Congress considered the Pandemic Risk Insurance Act of 2021.[4] This act would have created a parametric insurance facility, which is a nonassessable joint underwriting association providing parametric insurance for business interruptions caused by pandemics. Although much fanfare surrounded this concept, as of November 2022, it had not gained meaningful federal legislative traction.

In terms of case law, only one case involving parametric insurance has been documented in the United States. In *Johnson v. Climate Corp.*,[5] plaintiffs alleged that the insurer sold a policy based on the data from the previous year and misrepresented the policy while defining the triggers in such a way so as to pay out less often. The court denied the defendant insurer's motion to dismiss. Although the court's denial of the motion to dismiss did not delve deeply into parametric insurance considerations, two noteworthy points were that the court found that factual inquiry was needed to discern whether the policy metrics were triggered, and the court indicated that bad faith claims can possibly be brought against parametric insurers much like bad faith claims exist in the traditional insurance context.

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2. *See* Tenn. Code Ann. § 56-13-103(a)(10). **3.** *See* 2017 Legis. Bill Hist. U.S. S.B. 3072, and Commerce, Justice, Science, and Related Agencies Appropriations Act, 2019, 115 S. 3072. **4.** 117 H.R. 5823. **5.** 2016 U.S. Dist. LEXIS 197940 (D. Neb. Nov. 22, 2016).

Benefits and Challenges of Parametric Insurance

Without the need to assess actual losses, claim payments can be dispersed very quickly, increasing post-event liquidity, and allowing parties to make repairs immediately. This is especially helpful for business-interruption claims when wages need to be paid to employees. It also reduces the overhead for the insurance company by virtually eliminating the claims-handling process. As streamlined as the parametric claims-handling process already is, in the future, it could be completely automated using blockchain smart contracts. Because the trigger for any parametric claim is objective and verifiable by disinterested third parties, the likelihood of potential coverage disputes is significantly less than with traditional insurance policies. Indeed, there has been only one reported case related to a parametric insurance policy in the United States to date. Parametric insurance may also reduce moral hazard: the insureds have an incentive to minimize losses because their actual losses are not covered.

It also reduces the risk of both insurance fraud and bad faith claims processing because the events are large scale and independently verified. Because the claim payments are divorced from actual losses, insureds can use the proceeds to remediate damage that would not typically be covered by a traditional insurance policy, such as sublimited or excluded losses (beach erosion, landscaping, tennis courts, etc.), evacuation costs, or increased operating expenses. This makes parametric insurance a good supplement to traditional insurance.

Another benefit of parametric insurance is its bespoke nature. Each policy is aligned to the insureds' own risk tolerance with a unique index and payout structure. For instance, a client with earthquake mitigation measures in place might only want to insure against earthquakes of a certain magnitude, knowing weaker earthquakes will not damage their buildings. Meanwhile, another client may not have any mitigation strategies in place and need coverage for even weaker earthquakes. On the other side of the coin, insurers can use large data sets to carefully design triggers so that claim payments better correlate with actual losses.

Of course, parametric insurance does pose its own unique challenges. With traditional insurance, the basis risk is the deductible and the possibility that the losses will either be excluded or exceed policy limits. With parametric insurance, the basis risk is higher because the insured may suffer losses from an event that fails to trigger the policy, especially with cat-in-the-box policies.

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For instance, an insured's roof might be damaged by winds even though the eye of the storm does not pass through the circle, or the winds never reach the trigger speed. Careful trigger design mitigates these risks by ensuring that the trigger relates to actual losses as much as is possible, but the onus for this is on insurers who have little incentive to design triggers to pay out more often.

There is also the possibility that parametric policies taken out by governments may increase moral hazard. While the policies do increase the incentive to take measures to mitigate losses, they decrease the incentive to prevent the type of events that trigger coverage. Governments protected by parametric policies may lose interest in disaster mitigation strategies that would reduce the likelihood that the policy is triggered, such as forest management techniques that reduce the incidence of forest fires or efforts to bolster natural buffer zones that reduce windspeed in the event of a hurricane. Finally, because all of the parametric policies currently being offered are bespoke, it may be more difficult for insureds to obtain information about policies and compare prices.

The Future of Parametric Insurance

As the frequency and value of catastrophic losses continue to increase in the coming years and decades, coupled with the increasingly sophisticated data and modeling available to insurance markets, parametric insurance is expected to further mature and expand, becoming a key piece of many public and private entities' risk management programs. L

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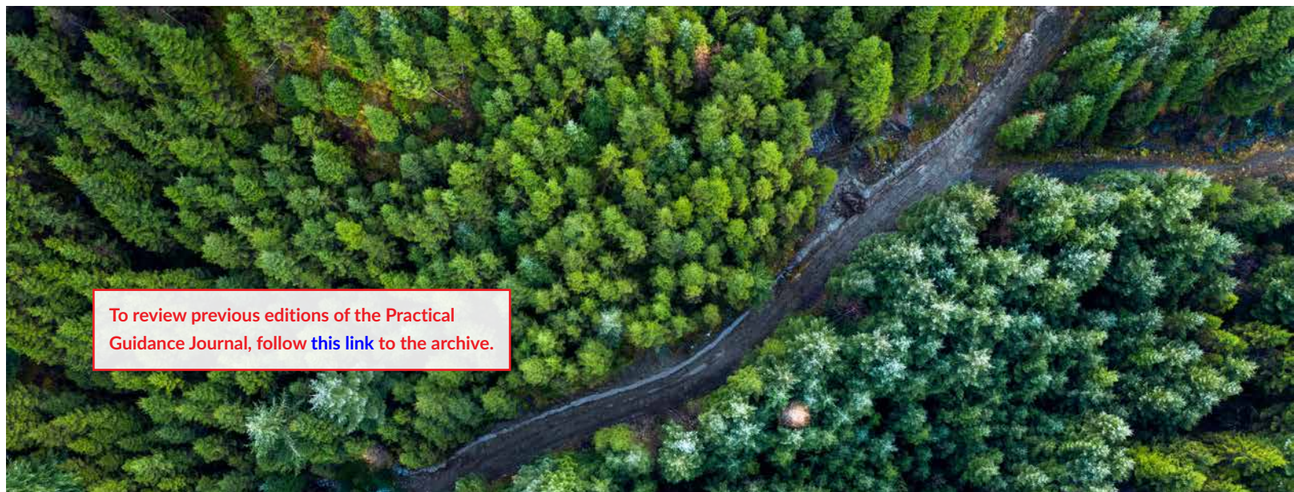

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Annemargaret Connolly and Thomas Goslin
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Climate Change Considerations in **M&A Transactions**

Introduction

Climate change is arguably the most high-profile and rapidly evolving environmental issue facing the global business community today. Governments of nearly every nation have acknowledged the risks posed by a warming climate and taken some action either to combat those risks, to mitigate the physical effects of climate change, or both. In addition, many corporations have publicly announced efforts to reduce emissions of greenhouse gasses (GHGs) associated with their operations and to otherwise take steps to combat climate change. Companies involved in certain mergers and acquisitions need to be aware of the risks related to climate change that may arise in the transactional context. While not every deal will involve climate change-related diligence, more and more industries are becoming subject to regulations and legal actions aimed at combatting climate change. Others have found that a changing climate may present direct risks to property and supply chains. In addition, many companies have taken to marketing themselves as climate-friendly organizations in an effort to attract businesses and investment, therefore creating a risk that failure to live up to those claims may prove off-putting to customers and investors and possibly result in legal liability. In order to properly assess and value corporate assets in M&A transactions, buyers and sellers of regulated assets need to understand the potential impact of climate change on business and successfully anticipate developments in this rapidly evolving area of law and policy.

There is no set formula for assessing climate risk in the transactional context. Due diligence will need to be tailored to the target and will vary substantially depending on the industry and the location of the target's operations. That said, risks associated with climate change generally fall into one of four categories: physical risks, customer and investor considerations, compliance risks, and litigation risks, each of which is discussed in more detail below. Given the potential enormity of the issues presented by climate change, and the wide-ranging efforts taken in response, climate change diligence is no longer limited to deals involving power plants and heavy industry. At a minimum, parties in nearly every M&A transaction should conduct a preliminary assessment to determine whether any or all of these categories of risk are present with respect to a target.

Physical Risks

While perhaps the most difficult to assess, climate change's most obvious risks relate to disruptions to a company's business or damage to a company's assets (e.g., facilities, infrastructure, land, or resources) due to physical impacts, such as rising sea levels, more extreme storms, floods, fires, and drought. Recent destructive hurricane seasons and the forest fires that have blazed across the western United States serve as a reminder of the devastation that can be caused by natural disasters, the prevalence and intensity of which some are attributing to climate change. Although it can be argued that virtually every sector of the U.S. economy faces risks for the short- and long-term physical effects of climate change, it appears likely that certain sectors will be disproportionately impacted. For example, the agriculture sector faces greater risks associated with water scarcity, droughts, and other changing weather patterns, as well as increased exposure to new pests and diseases.

Likewise, due to climate change, the tourism industry is vulnerable to increased weather extremes, rising temperatures, coastal erosion, droughts, and changes in precipitation patterns and snow reliability. The insurance industry, perhaps more than any other, faces increased risks from virtually all physical impacts of climate change. At meetings at the United Nations in 2015, top insurers called on governments to step up global efforts to build resilience against natural disasters exacerbated by climate change and highlighted that average economic losses from disasters in the last decade amounted to around $190 billion annually, while average insured losses were about $60 billion.

While supply chain due diligence is now a common element of any M&A transaction, it is becoming increasingly important to assess how climate change could impact a target's suppliers as well as raw materials used in the target's operations.

Assessing the physical risks posed by climate change can be extraordinarily difficult, given the randomness of natural disasters and the vicissitudes in weather. Droughts, hurricanes, floods, and fires are nearly impossible to predict with any certainty. That said, it is becoming easier in certain circumstances to observe trends, particularly with respect to rising sea levels. For example, a study by the University of Miami[1] found that Miami Beach flooding events have increased significantly over the last decade due to an acceleration of sea-level rise in South Florida. Thus, should a target company hold significant assets in South Florida, or in any other coastal area experiencing increased flooding, a potential buyer would be wise to assess what impacts such flooding could have on the target's operations and assets. Likewise, tourism-based assets such as ski or beach resorts may have a limited carbon footprint yet face substantial physical risks due to warmer long-term temperatures or rising sea levels. A recent study by the European Geosciences Union found that European ski resorts may lose up to 70% of their snow cover by 2100 due to climate change.

In addition, there may be significant physical risks associated with a target's supply chain potentially affecting the target's ability to reliably produce its products and deliver services. For example, at first glance, a clothing manufacturer targeted in an acquisition may seem unlikely to be subject to material risks associated with climate change; however, if such clothing manufacturer sources its products from a low-lying area like Bangladesh, an essential source for many clothing retailers globally, risks associated with climate may be far greater than originally anticipated, as Bangladesh is frequently cited as a country most likely to be impacted by the anticipated sea-level rise associated with climate change. While supply chain due diligence is now a common element of any M&A transaction, it is becoming increasingly important to assess how climate change could impact a target's suppliers as well as raw materials used in the target's operations.

1. University of Miami, *Flooding Events Increase on Beaches* (2016.)

Shareholder Activism Considerations

Carbon-intensive businesses, such as oil and gas exploration and production, electric utilities, and chemical manufacturers, also face risks related to a growing cadre of institutional and other investors who have pledged to reduce or eliminate the carbon-intensity of their investments and portfolios. Known as fossil fuel divestment or portfolio decarbonization, these socially motivated campaigns seek to achieve reductions in GHG emissions by shifting investment capital from particularly carbon-intensive companies, projects, and technologies in each sector and by reinvesting that capital into carbon-efficient companies, projects, and technologies of the same sector. If a sufficient number of institutional investors start to engage and/or reallocate capital on the basis of companies' GHG emissions, it can provide a strong incentive for those companies to rechannel their own investments from carbon-intensive to low-carbon activities, assets, and technologies. According to a report[2] prepared by the Global Divestment Commitments Database, as of October 2021, approximately $40.43 trillion in assets have committed to divest from fossil fuels, an increase of 400% in approximately four years. Although the direct financial impact on share prices related to such campaigns is likely to be small in the short term, the report concluded that reputational damage, or stigmatization, can still have major financial consequences. In particular, significant reputational damage to carbon-intensive businesses could reduce the availability or increase the cost of debt, both short-term working capital and long-dated securities.

In the wake of the agreement reached at the 2015 United Nations Framework Convention on Climate Change (UNFCCC) meeting in Paris, known widely as the Paris Agreement, there were 89 shareholder resolutions filed on climate change in 2016. In 2022, approximately 20% of all shareholder resolutions filed in the United States related to climate change. Many institutional investors are now considering climate-related factors in their investment decisions. In fact, in one of his annual letters to chief executives,[3] Laurence Fink, CEO of BlackRock, the world's largest asset manager with $10 trillion in assets under management, announced that "evidence on climate risk is compelling investors to reassess core assumptions about modern finance." To address this shift, BlackRock will introduce new funds that do not invest in fossil-fuel oriented stocks, vote aggressively against management teams failing to make progress on sustainability, and press for additional disclosure from companies regarding plans "for operating under a scenario where the Paris Agreement's goal of limiting global warming to less than two degrees is fully realized."

2. Global Fossil Fuel Divestment Commitments Database, *Invest-Divest 2021: A Decade of Progress Towards a Just Climate Future* (Oct. 26, 2021). 3. Larry Fink, *A Fundamental Reshaping of Finance* (2020).

There is perhaps no better example of the shifting in opinions on this issue than the case of ExxonMobil. In May 2017, 62% of shareholders voted for a nonbinding measure that would require ExxonMobil to report on the risks to its business from new technologies and global climate change policies. This represented a substantial increase over the 38% of voting shareholders who voted for a similar measure just one year earlier, indicating that the proposal was backed by at least some of Exxon's top institutional shareholders. Exxon opposed the proposal, arguing that it already provided information on risks to its business from clean energy technologies and global climate change policies. Then, in May 2021, Engine No. 1, a small activist hedge fund, surprised Wall Street by winning three seats on Exxon's 12-member board of directors with a promise to focus on Exxon's long-term strategy to reduce climate risk, which it argued threatened shareholder value. Engine No. 1's campaign won the support of several of Exxon's largest institutional investors, including BlackRock, Vanguard, and State Street, which previously had committed to reduce carbon emissions from the companies in which they invest.

In a similar vein, another concept potentially relevant to carbon-intensive businesses is that of stranded assets, a financial term that describes corporate assets that become subject to unanticipated or premature write-downs, devaluations, or conversion to liabilities. With respect to climate change, the term has become more prevalent in recent years as economists and scientists study the potential ramifications of regulatory policies, technological advances, consumer behaviors, or other market actions that could dramatically decrease the use of fossil fuels. Investors are also beginning to take notice, expressing concern that action needed to curtail the increase in global temperatures ultimately will result in a regulatory mandate to leave proven reserves of fossil fuels in the ground or will otherwise make it uneconomical to produce or use fossil fuels. Certain institutional investors have gone on record to state that stranded asset-related concerns have led them to divest, while others are pressuring companies to disclose their strategies to deal with the potential for stranded assets.

When assessing carbon-intensive targets in an M&A transaction, it is important to understand how that target, and its industry, is perceived by investors and financial institutions. Coal companies, for example, may have a much more difficult time attracting investment given perceptions about the negative environmental attributes of the industry. This could result in depressed pricing for the target's assets, and it could also make it more difficult to obtain debt financing, if needed. Certainly, financial investors should understand the risks of reputational damage to carbon-intensive businesses, and any trends in those risks, as such concerns may increase during the hold period and jeopardize a successful exit.

Compliance Risks

Despite a varied and rapidly shifting regulatory landscape on climate, parties to an M&A transaction should identify and assess compliance risks. Many jurisdictions have passed laws or promulgated rules and regulations aimed at combatting climate change. Some of these legal requirements may directly affect a target company, while others may have indirect effects on supply chains and the price of raw materials, or otherwise impact operating costs. Buyers and lenders in M&A deals, therefore, need to understand the current state of climate change regulation to determine whether a target's business is directly or indirectly affected by such regulation. Given the rapid developments in climate change regulation, this is not always an easy task.

> In the absence of stable federal policy concerning climate change, many states have taken action to reduce greenhouse gas emissions or otherwise respond to climate change.

Federal Climate Change Regulation

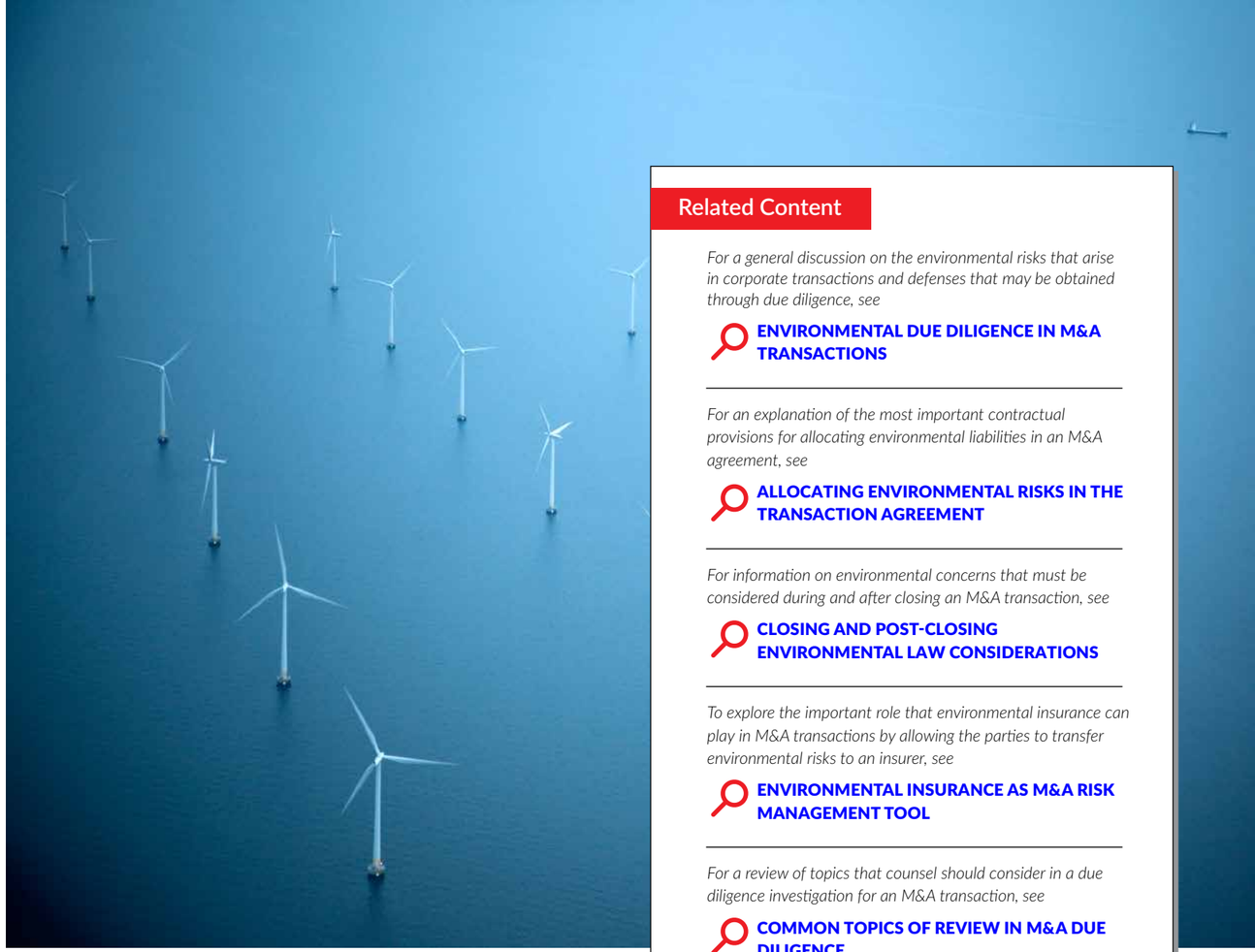
The U.S. federal government's effort to regulate climate change serves as a vivid example of the unsettled state of domestic climate change law. In 2007, the U.S. Supreme Court ruled in *Massachusetts v. EPA*[4] that GHGs must be regulated under the federal Clean Air Act, a law first passed in 1970 (long before climate change entered the lexicon), provided that the Environmental Protection Agency (EPA) issues a finding that GHGs endangered the public health and welfare, which EPA has since done. Around this time, Congress made several attempts to amend the Clean Air Act to impose restrictions on GHG emissions; however, these efforts never met with success. Frustrated with Congress' inability to pass what it saw as important restrictions on GHG emissions, the Obama Administration attempted to bypass Congress by promulgating several regulations under the existing Clean Air Act aimed at reducing GHG emissions from the power sector, the largest emitter of GHGs in the United States. These rules, promulgated by the EPA, imposed standards on both new and existing power plants. These rules were immediately challenged in court by plaintiffs, who argued that the EPA overstepped its authority under the Clean Air Act, and many of these challenges were pending when the Trump Administration subsequently rescinded the rules. As such, it remains unclear to what extent the EPA can regulate GHGs, notwithstanding the Supreme Court's finding that it must.

The unsettled state of federal law concerning climate change makes it very difficult to assess what impact, if any, federal regulation will have on a particular business operating in the United States. Certainly, the power-generation industry remains subject to a shifting legal regime that could have profound impacts on their operations. For companies assessing potential M&A transactions with targets in the traditional or renewable energy industries, including any of their suppliers or major customers (which now include many Fortune 500 companies that have directly contracted for energy from solar and wind farms), assessing possible impacts from federal climate regulation will be key to any due diligence exercise.

State Regulation of Climate Change

In the absence of stable federal policy concerning climate change, many states have taken action to reduce GHG emissions or otherwise respond to climate change. For example, a block of 12 states in the Northeast and Mid-Atlantic have joined together to establish a cap-and-trade program, known as the Regional Greenhouse Gas Initiative[5] (RGGI), regulating GHG emissions from power plants located within the member states (as of the date of this writing, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Virginia). Under a cap-and-trade program, GHG emitters either are granted or must purchase credits equal to the amount of GHGs emitted over a certain period of time. The number of available credits is capped, ensuring that total GHGs emitted from all regulated sources do not exceed a preset amount, which often lowers over time. It is up to the source either to reduce emissions or obtain sufficient credits to match its emissions. In general, market forces set the price of a credit on an open market.

While RGGI is focused exclusively on the power-generation sector, California (the world's sixth-largest economy) has enacted, under the California Global Warming Solutions Act of 2006,[6] a more expansive cap-and-trade program that applies to utilities, large industrial facilities, and certain fuel distribution companies, regulating 85% of all of California's GHG emissions. One interesting aspect of the California program is that it allows for what are known as offset credits, whereby businesses that voluntarily reduce GHG emissions can generate credits equal to their GHG reduction, which credits can then be sold to regulated entities to meet their compliance obligations under the cap-and-trade program. California recently renewed its commitment to its cap-and-trade law, extending the program until 2030, and requiring that it reduce GHG emissions by 40% below 1990 levels over the next 10 years.



Not to be outdone, in June 2019, New York, the United States' fourth most populous state and fifth largest economy, enacted legislation[7] mandating the use of 100% carbon-free electricity by 2040 and economy-wide, net-zero carbon emissions by 2050. By 2030, the state also must generate 70% of its electricity from renewable sources, the vast majority of which is expected to come from hydroelectric power. State agencies will be required to assess and implement strategies to reduce their GHGs and to consider the impact on attaining the statewide GHG emissions limits when issuing permits, licenses, or other administrative approvals. The law's supporters anticipate that its requirements will spur the growth of green jobs for decades, requiring a vast work force to weatherize homes, update furnaces, and build clean energy infrastructure such as solar panels and wind farms.

Related Content

For a general discussion on the environmental risks that arise in corporate transactions and defenses that may be obtained through due diligence, see

ENVIRONMENTAL DUE DILIGENCE IN M&A TRANSACTIONS

For an explanation of the most important contractual provisions for allocating environmental liabilities in an M&A agreement, see

ALLOCATING ENVIRONMENTAL RISKS IN THE TRANSACTION AGREEMENT

For information on environmental concerns that must be considered during and after closing an M&A transaction, see

CLOSING AND POST-CLOSING ENVIRONMENTAL LAW CONSIDERATIONS

To explore the important role that environmental insurance can play in M&A transactions by allowing the parties to transfer environmental risks to an insurer, see

ENVIRONMENTAL INSURANCE AS M&A RISK MANAGEMENT TOOL

For a review of topics that counsel should consider in a due diligence investigation for an M&A transaction, see

COMMON TOPICS OF REVIEW IN M&A DUE DILIGENCE

For a checklist of considerations for the M&A practitioner when addressing environmental issues in a purchase or merger agreement, see

ENVIRONMENTAL PROVISIONS IN ACQUISITION AGREEMENTS CHECKLIST

For a list of the of the resources available in Practical Guidance relating to the M&A due diligence process, see

DUE DILIGENCE RESOURCE KIT

For an overview of the due diligence process to be undertaken before the potential acquisition of a public company in a negotiated transaction, see

DUE DILIGENCE CHECKLIST (PUBLIC DEALS)

4. Mass. v. EPA, 549 U.S. 497, 127 S. Ct. 1438, 167 L. Ed. 2d 248 (2007).

5. Regional Greenhouse Gas Initiative, *Elements of RGGI* (2022). 6. 2006 Cal. AB 32.

In addition to cap-and-trade programs, a majority of states have taken action to promote the use of renewable energy technologies. Twenty-nine states as well as the District of Columbia currently have adopted binding renewable portfolio standards, which require that a certain percentage of the retail electricity power consumed, or generated, come from renewable energy sources—typically wind, geothermal, solar, hydro, landfill gas, or biomass (and nine additional states have renewable or alternate energy goals, which generally are not legally binding). Minnesota, for example, has had a program in place for over a decade aimed at boosting renewable energy use throughout the state economy by requiring utilities to procure 25% of their power from renewable sources by 2025 and has tracked GHG emission reductions in a variety of industrial, agricultural, and transportation sectors.[8] Hawaii requires utilities to procure 100% of their electricity from renewable sources by 2045 and, in addition, has placed caps on GHG emissions from major sources, such as power plants and refineries.[9]

In short, many states are acting to fill the void left by the federal government in the area of climate-change regulation. Parties to M&A transactions need to be aware of state-level requirements, both those on the books and those pending in the state legislatures and regulatory agencies. Much like the federal government, the status of climate-change regulation at the state level remains in flux, though unlike at the federal level, the trend appears to be towards greater regulation. Depending on the state and the industry, the operating costs associated with these regulations could be substantial.

International Climate Change Regulation

Parties to M&A transactions that involve overseas operations also need to be aware that many foreign jurisdictions have enacted laws aimed at combatting climate change, and it is likely that many more will in the next decade. This is because 189 nations (out of 197 parties to the convention) have ratified the Paris Agreement, which requires signatories to take steps to keep global temperature rise below 2 degrees Celsius above pre-industrial temperatures while pursuing efforts to limit it to 1.5 degrees Celsius. The Paris Agreement seeks to increase the ability of the global community to adapt to, and directs funds towards, low-emission and climate-resilient development. Paris Agreement parties generally are permitted to adopt whatever means they choose for achieving those goals, though countries had to submit plans to the UNFCCC by 2020 detailing those efforts and are required to update those plans every five years.

7. 2019 N.Y. SB 6599; N.Y. Envtl. Conserves. Law § 54-1523.

Of course, the Paris Agreement is not the first international undertaking to combat climate change. Businesses operating in the European Union likely are familiar with its GHG cap-and-trade program, known as the EU Emissions Trading System (EU ETS), which is the world's first international emissions trading system to address GHG emissions from companies and is by far the biggest carbon market today. It covers more than 11,000 power plants and manufacturing facilities in the 27 EU member states as well as Iceland, Liechtenstein, and Norway. In addition, airline operators flying within and between most of these countries are also regulated under the programs such that, in total, around 45% of total EU emissions are limited by the EU ETS.

China, the world's largest emitter of GHGs, is also taking steps to combat climate change. A Paris Agreement signatory, China committed to reducing GHG emissions by up to 45% from 2005 levels by 2020 and increasing renewable energy production so that it will meet 20% of national electricity needs by 2030. In addition, since 2011, China has implemented a number of cap-and-trade pilot programs in cities and provinces around the country, testing market-based mechanisms for reducing GHG emissions.

Outside the United States, it is largely accepted that climate change poses a significant threat to human health, the environment, and many industries. Almost without exception, the trend internationally has been towards greater regulation, and given the commitments embodied in the Paris Agreement, there is little reason to believe this trend will not continue. Therefore, parties to M&A deals involving foreign operations will need to assess what steps the foreign jurisdiction is taking to combat climate change, and because there is no overarching international agreement as to what those steps should be, a country-by-country analysis will be required.

Litigation Risks

It also is increasingly important in M&A transactions to assess potential litigation risks arising out of climate change. Over the past few years, climate-change litigation against private parties has arisen in numerous contexts, though the largest GHG emitters, particularly those in the oil and gas industry, appear to be the most likely targets.

Government Investigations into Climate-Related Disclosures

One litigation risk concerns government investigations into disclosure practices surrounding the existence or potential impacts of climate change. These investigations seek to determine whether certain energy companies have participated in a long-standing disinformation campaign to create doubt about the existence of climate change and to undermine scientific findings regarding climate change. In November 2015, the New York Attorney General announced that a two-year investigation found that Peabody Energy Corporation, the largest publicly traded coal company in the world, had violated New York laws prohibiting false and misleading conduct in the company's statements to the public and investors regarding financial risks associated with climate change and potential regulatory responses. As part of the agreement concluding the investigation, Peabody agreed to file revised shareholder disclosures with the U.S. Securities and Exchange Commission that "accurately and objectively represent these risks to investors and the public." That same month, the New York Attorney General issued ExxonMobil a subpoena ordering the company to turn over four decades worth of research findings and communications into the causes and effects of climate change. New York, Massachusetts, and California have since commenced similar investigations into ExxonMobil's conduct with respect to climate change disclosures. New York's and Massachusetts' investigations culminated in lawsuits against Exxon alleging that it has defrauded investors. In December 2019, the judge in the New York lawsuit cleared Exxon of the investor fraud obligations but noted "nothing in this opinion is intended to absolve Exxon from responsibility for contributing to climate change."[10] Massachusetts' case remains pending. In addition, members of Congress have called on the Department of Justice to investigate whether Shell Oil deceived the public on climate change at the same time it was preparing its business operations for rising sea levels. The ultimate impact of such investigations into fossil fuel company conduct regarding climate change is unclear. Nevertheless, governmental investigations can be costly, both in terms of legal fees and reputation. As such, parties to M&A transactions involving energy companies and other large sources of GHGs should assess a target's disclosures concerning climate change to determine whether they present any issues.

8. Minn. Stat. § 216B.1691. 9. Haw. Rev. Stat. Ann. § 269-91 et seq. 10. People v. Exxon Mobil Corp., 119 N.Y.S.3d 829 (N.Y. Sup. Ct. 2019).

Tort Litigation

Large emitters of GHGs also face litigation risks associated with tort claims alleging various injuries related to climate change. Several cases have been brought in courts across the country alleging damages related to climate change under tort theories such as nuisance, trespass, and negligence. For example, in *Connecticut v. American Electric Power Co.*,[11] eight states, the City of New York, and three environmental groups filed suit against five energy companies, alleging that the carbon dioxide emissions from the companies' power plants contributed to the public nuisance of global warming. Plaintiffs asked the district court to cap carbon dioxide emissions and mandate annual emissions reductions. The court granted defendants' motions to dismiss on the grounds that the case raised non-justiciable political questions; however, on appeal the U.S. Court of Appeals for the Second Circuit reversed the decision, holding that the plaintiffs had standing to bring their claims.[12] The U.S. Supreme Court later reversed the Second Circuit, holding that the plaintiffs' claims were preempted by Clean Air Act, which the Court found delegated authority to regulate harms associated with GHG emissions to the EPA.[13]

Another example of climate change tort litigation can be found in the case of *Comer v. Murphy Oil*. In the district court case, Mississippi property owners had brought suit against numerous insurers, chemical companies, oil companies, and coal companies, alleging that the defendants' carbon dioxide emissions contributed to global warming, which warmed the waters in the Gulf of Mexico and increased the frequency and severity of hurricanes, including Hurricane Katrina.[14] Under theories of private nuisance, trespass, and negligence, the plaintiffs sought damages for loss of property, loss of income, cleanup expenses, loss of loved ones, and emotional distress. The suit was dismissed on standing and political question grounds, and plaintiffs appealed to the U.S. Court of Appeals for the Fifth Circuit, which initially overturned the district court ruling for the same reasons cited by the Second Circuit in the *Connecticut v. American Electric Power Co.* case.[15] However, after a protracted legal battle over procedural rules, the district court's decision ultimately was allowed to stand.[16]

A further example of climate-related tort litigation is *California v. GMC*,[17] where the state of California sued six manufacturers of automobiles, alleging that emissions from the manufacturers' vehicles contributed to global warming and constituted a public nuisance under state and federal law. California sought compensation for its current and future expenditures related to global warming. The district court also dismissed the suit on political question grounds, and the case was not appealed.

11. Conn. v. Am. Elec. Power Co., 406 F. Supp. 2d 265 (S.D.N.Y. 2005). **12.** Conn. v. Am. Elec. Power Co., 582 F.3d 309 (2d Cir. 2009). **13.** Am. Elec. Power Co. v. Conn., 564 U.S. 410, 131 S. Ct. 2527, 180 L. Ed. 2d 435 (2011). **14.** Comer v. Nationwide Mut. Ins. Co., 2006 U.S. Dist. LEXIS 33123 (S.D. Miss. Feb. 3, 2006). **15.** Comer v. Murphy Oil USA, 585 F.3d 855 (5th Cir. 2009). **16.** Comer v. Murphy Oil USA, 718 F.3d 460 (5th Cir. 2013). **17.** California v. GMC, 2007 U.S. Dist. LEXIS 68547 (N.D. Cal. Sept. 17, 2007).

Although courts have held that climate-related tort litigation claims are preempted by the Clean Air Act, a renewed round of climate-related tort litigation has since arisen....

One unique case employing creative legal theories combined a traditional public nuisance claim with a more innovative conspiracy claim to confront issues related to the effects of global climate change. In this case,[18] a coastal Alaskan city and village, experiencing such drastic erosion and severe storm effects that experts declared the entire town had to be moved to a safer location, sued nearly two dozen large energy companies for contributing to the global public nuisance of climate change and for conspiracy to engage in a misinformation campaign about the effect of human activity on climate change. Attorneys for the village likened this claim of conspiracy to misinform the public to claims made against tobacco companies for similar behavior. The U.S. District Court for the Northern District of California dismissed the case on a number of grounds, and on appeal, the U.S. Court of Appeals for the Ninth Circuit found that the U.S. Supreme Court's decision in *Connecticut v. American Electric Power Co.* meant that the plaintiffs could not proceed with their case.[19]

Although courts have held that climate-related tort litigation claims are preempted by the Clean Air Act, a renewed round of climate-related tort litigation has since arisen, prompted, in part, by the Trump Administration's actions aimed at rolling back existing GHG regulations. At risk of incurring potentially substantial liabilities to address climate change-related liabilities, including rising sea levels, the state of Rhode Island, eight cities and counties in California, along with New York City and municipalities in Colorado and Washington State, have each filed civil lawsuits against upwards of 20 fossil fuel companies, including Chevron, ExxonMobil, Peabody Energy, and Arch Coal, under various state common law tort theories alleging that each defendant has been aware for decades that burning fossil fuels is a primary cause of climate change. Whether these cases are a sign of things to come remains to be seen, but it is noteworthy that the plaintiffs' claims were brought under state common law, which is not preempted by the federal Clean Air Act. To date, these disputes have centered on whether the cases should be heard before state or federal courts. While two California cases were moved to a federal court and later dismissed on the basis that this issue should be addressed by Congress, notably, in July 2019, a federal judge ruled that Rhode Island's claims were all made under state law, and therefore should be heard before state court. The defendants have appealed the matter to the U.S. Court of Appeals for the First Circuit, seeking to have the matter remain in federal court.

NEPA Litigation

Litigants also have turned to the National Environmental Policy Act of 1969 (NEPA) as a means by which to pursue climate change interests in court. In *Border Power Plant Working Group v. Department of Energy*,[20] one of the first cases to raise climate change issues in challenging NEPA compliance, the court evaluated whether the Department of Energy and the Bureau of Land Management adequately complied with NEPA requirements in connection with granting permits and rights-of-way for construction of new utility lines between California and Mexico. The court determined that the agencies violated NEPA requirements by arbitrarily and capriciously failing in their Environmental Assessment (EA) to adequately account for, among other things, carbon dioxide emissions contributing to global warming. After the court struck down their initial Finding of No Significant Impact, the agencies undertook another EA to produce an Environmental Impact Statement (EIS) that included, inter alia, the cumulative impact of carbon dioxide emissions on the environment.[21] In *Mid States Coalition for Progress v. Surface Transportation Board*, the court rejected an EIS submitted by the federal Surface Transportation Board (STB) for a proposed rail-line construction project geared toward coal transportation across the Midwest because the EA analysis failed to include environmental impacts from increased carbon dioxide, among other, emissions.[22] The STB subsequently conducted another EA and produced another EIS, again approving the project. This time, the court upheld the EIS, which now included an analysis of the environmental impact of carbon dioxide and other emissions on the environment.[23] Most recently, in the case of *Sierra Club v. FERC*, the U.S. Circuit Court of Appeals for the District of Columbia ruled that the Federal Energy Regulatory Commission (FERC) failed to adequately review the environmental impacts of the GHG emissions of a natural gas pipeline based on the FERC's failure to assess the climate-related impacts of burning the gas transported by the pipeline.[24] In response to the *Sierra Club* ruling, the FERC revised the final EIS to include a quantitative estimate of the pipeline project's downstream GHG emissions and why the

18. Native Village of Kivalina v. ExxonMobil Corp., 663 F. Supp. 2d 863 (N.D. Cal. 2009). **19.** Native Village of Kivalina v. ExxonMobil Corp., 696 F.3d 849 (9th Cir. 2012). **20.** Border Power Plant Working Grp. v. Dept. of Energy, 260 F. Supp. 2d 997 (S.D. Cal. 2003). **21.** *See* 68 Fed. Reg. 61,796 (Oct. 30, 2003). **22.** 345 F.3d 520 (8th Cir. 2003). **23.** Mayo Found. v. Surface Transp. Bd., 472 F.3d 545 (8th Cir. 2006). **24.** 867 F.3d 1357 (D.C. Cir. 2017).

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FERC regards the Social Cost of Carbon tool as not useful for NEPA compliance.[25] While these NEPA-related cases were not filed directly against private parties (and, in fact, cannot be), it is clear that they can have a substantial impact on a private party's operations.

In June 2020, then-President Trump signed an executive order[26] allowing major infrastructure projects and energy projects, such as new mines, pipelines, and highways, to move forward with a less rigorous environmental review. The executive order arguably permits federal agencies to waive provisions put in place by NEPA, and almost certainly will be challenged in court as will agency actions or specific projects that proceed without NEPA review.

To date, climate-related litigation has been limited largely to parties or projects involved in oil and gas and other major GHG-emitting industries. There also has been something of a recent lull in the number of climate-related cases filed in the courts; however, many attribute this to the fact that the Obama Administration was seen as taking a proactive role in addressing climate change. Given the change in approach adopted by the Trump Administration, and the subsequent election of President Joseph R. Biden, it would not be surprising to see a surge in climate change litigation in the near future. As such, parties to M&A transactions involving major GHG emitters would be wise to assess the risk that the target may be named in such litigation.

Conclusion

Assessing climate change risks in M&A transactions can be difficult, at times subjective, and in many cases speculative. Any diligence exercise in this area must be tailored to the particular target, the location and operations of its assets, the nature of its supply chain, and the target's own experience managing climate-related risk. There simply is no standard procedure for conducting this type of due diligence. That said, every climate change diligence exercise in an M&A transaction will require the parties to consider the totality of a target's operations and anticipate infrequent occurrences that may present catastrophic risks.

When assessing companies that emit significant quantities of GHGs, the parties and their counsel must examine issues concerning the target's current and future compliance obligations with climate change-related regulations. Some questions to ask in M&A due diligence include:

- Does the target operate in jurisdictions where GHG emissions are regulated or where there are current or recent historic efforts to impose such regulation?
- If currently regulated, will the target be required to make significant capital expenditures to obtain or maintain compliance?
- Is the target part of an industry that has been subject to governmental investigations or litigation relating to climate change?
- Has the target made public statements or disclosures concerning climate change risk that may in any way be considered misleading?

While it is perhaps obvious that climate change-related diligence of major GHG emitters is important, it is becoming clear that such diligence is just as important in M&A deals involving companies with little or no GHG emissions. These types of questions need to be asked regardless of whether the target operates in a carbon-intensive industry:

- Does the target operate, or are its raw materials sourced, in areas prone to flooding or at risk of rising sea levels?
- Is a warming climate likely to affect business operations or a target's supply chain?
- Is the company developing, or dependent upon, a project that may require a NEPA assessment?
- Is the target procuring renewable energy from projects dependent on governmental subsidies or similar support programs?

Certainly not all of these risks will be present in every M&A deal; however, where they do materialize, they can be material to the transaction. As such, it is key for those involved in M&A deals to understand the risks and think creatively about how they can be assessed and, if possible, managed in the transactional context. L

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25. Fla. Southeast Connection, LLC, 164 F.E.R.C. P61,099 (2018). 26. Accelerating the Nation's Economic Recovery From the COVID-19 Emergency by Expediting Infrastructure Investments and Other Activities, 85 Fed. Reg. 35,165 (June 9, 2020).

The Practical Guidance Real Estate Team

Climate Change Legislation Tracker (Real Estate) (NY)

This tracker provides an overview of New York climate change legislation that impacts real estate ownership and development.

This document tracks legislation enacted at the state level and in New York City. This tracker provides direct links to source text, the dates enacted, and brief descriptions of the developments. Developments are organized in reverse chronological order.

Practical Guidance includes these Climate Change Legislation Trackers for additional jurisdictions:

- Climate Change Legislation Tracker (Real Estate) (CA)
- Climate Change Legislation Tracker (Construction) (CA)
- Climate Change Legislation Tracker (Construction) (NY)
- Climate Change Legislation Tracker (Construction) (OH)

New York State Legislation

Legislation	Source	Date Enacted	Description
Utility Thermal Energy Network and Jobs Act	2021 Bill Text NY S.B. 9422	July 5, 2022	Purpose is to promote development of thermal energy networks in the state. Amends (among other things) the Public Service Law and the Transportation Corporations Law to permit utility companies (i.e., gas and/or electric corporations) to generate, acquire, and supply thermal energy. Requires the Public Service Commission "to authorize and direct utilities to immediately commence piloting thermal energy networks in each and every utility territory." 2021 Bill Text NY S.B. 9422.
Advanced Building Codes, Appliance and Equipment Efficiency Standards Act of 2022	2021 Bill Text NY S.B. 9405	July 5, 2022	Implements stricter efficiency standards for a variety of appliances including televisions and computers. Updates the state's Energy Conservation Construction Code to align with the state's clean energy and climate agenda, including reduction of greenhouse gas and implementation of the CLCPA. When determining if a building code is cost effective, the Fire Prevention and Building Code Council shall take life-cycle energy savings into account.
2021 Bill Text NY A.B. 5390	2021 Bill Text NY A.B. 5390	Passed the New York State Legislature on May 23, 2022; awaiting governor's signature	Directs the New York State Department of Environmental Conservation, in consultation with the Office of Parks, Recreation and Historic Preservation, to develop strategies and set goals in the state's land acquisition plan to conserve 30% of state land by 2030. The agencies must prioritize conservation of land that would promote biodiversity, increase climate resiliency, preserve open space, and protect green space in urban areas.
Accelerated Renewable Energy Growth and Community Benefit Act	2020 N.Y. Laws 58	April 3, 2020 (enacted as part of the New York State 2020–2021 budget)	Purpose is to facilitate siting and construction of large-scale renewable energy projects in New York. Created the Office of Renewable Energy Siting (Siting Office) to serve as a centralized forum for reviewing proposed major renewable energy facilities and making siting decisions. The Siting Office will also establish uniform permit standards and conditions for large-scale renewable energy projects.
Environmental Justice Law, Article 48	N.Y. Envtl. Conserv. Law §§ 48-0101–48-0113	January 1, 2020	Amends the environmental conservation law to establish a permanent environmental justice advisory group and an environmental justice interagency coordinating council.

New York State Legislation

Legislation	Source	Date Enacted	Description
Climate Leadership and Community Protection Act (CLCPA)	2019 N.Y. SB 6599	July 18, 2019	Requires New York State to reduce economy-wide greenhouse gas emissions 40% by 2030 and no less than 85% by 2050 from 1990 levels. Created the Climate Action Council (the Council) to develop a scoping plan of recommendations to meet emissions targets. The Council released its draft scoping plan (available here) on December 30, 2021.
Community Risk and Resiliency Act (CRRA)	2013 N.Y. SB 6617	September 22, 2014	Requires applicants for permits or funding in specified programs to demonstrate that future physical climate risk due to sea level rise, storm surge, and flooding have been considered in project design. Also requires that these factors be incorporated into certain facility-siting regulations.

New York City Legislation

Legislation	Source	Date Enacted	Description
Local Law 154	2021 NYC Local Law No. 154	December 22, 2021	Effectively bans gas hookups in new buildings. Sets forth emissions limits for new buildings and prohibits combustion of any substance that emits 25 kilograms or more of carbon dioxide per million BTUs of energy (subject to certain exceptions). Prohibits the approval of construction documents or issuance of permits for new buildings that fail to comply with the emissions limits. Restrictions are phased in over six years based on property type. The phase-in timetable is as follows: ■ **January 1, 2024:** Buildings under seven stories ■ **January 1, 2025:** School Construction Authority buildings ■ **January 1, 2026:** Buildings under seven stories with at least 50% affordable housing units ■ **July 2, 2027:** Buildings with seven stories or more (other than affordable housing developments) ■ **January 1, 2028:** Buildings of seven stories or more with at least 50% affordable housing units
Climate Mobilization Act (CMA)	The Climate Mobilization Act, 2019	November 15, 2019	A legislative package aimed at reducing citywide greenhouse gas emissions by 40% by 2030 and 80% by 2050. Includes Local Laws 92, 94, 96, and 97, detailed below.
Local Law 92 and Local Law 94	2019 NYC Local Law No. 92; 2019 NYC Local Law No. 94	November 15, 2019	Require sustainable roofing zone on all newly constructed buildings and all buildings undergoing major roof renovations, subject to exceptions (see below). Required for 100% of the roof area. "Sustainable roofing zone" is defined as a solar photovoltaic electricity generating system, a green roof system, or both. Specific requirements are set forth in the law based on factors including area and slope of roof. Effective immediately but include five-year discretionary phase-in for certain affordable housing developments and distressed buildings. Exceptions include: ■ Areas required to be set aside for setbacks or access under building code and zoning laws ■ Areas occupied by rooftop structures and mechanical equipment ■ Areas occupied by stormwater management equipment ■ Terraces comprising less than 25% of the area of the largest floor plate in the building ■ Recreational spaces principal to the use of the building ■ Areas determined by Department of Buildings to be unfavorable to sustainable roofing zone

New York City Legislation

Legislation	Source	Date Enacted	Description
Local Law 96	2019 NYC Local Law No. 96	November 15, 2019	Establishes Property Assessed Clean Energy (PACE) financing program for commercial properties. Low-cost loan available to finance installation of renewable energy systems and energy efficiency improvements. Loan constitutes a lien on the real property and is repaid through a charge on the property's municipal tax bill.
Local Law 97	2019 NYC Local Law No. 97	November 15, 2019	Most buildings over 25,000 square feet must meet specified carbon emissions limits starting in 2024. More stringent emissions limits take effect in 2030. Also imposes energy efficiency standards. Applies to the following: ■ Buildings that exceed 25,000 gross square feet ■ Two or more buildings on the same tax lot that together exceed 50,000 gross square feet ■ Two or more buildings held in condominium form and governed by the same board of managers that together exceed 50,000 gross square feet Building owners must submit annual report certified by registered design professional demonstrating compliance (or noncompliance) with emissions limit for the previous year. Exceptions/alternate compliance options available for certain property types including affordable housing, houses of worship, and hospitals.

RESEARCH PATH: *Real Estate > Commercial Purchase and Sales > Practice Notes*

LexisNexis Creates Legal Aid Portal for Displaced Ukrainian Attorneys

In its ongoing effort to support the rule of law worldwide, the LexisNexis Rule of Law Foundation has established the Ukraine Legal Aid Portal to aid members of the Ukrainian legal community affected by the war in Ukraine.

ESTABLISHED IN CONJUNCTION WITH THE UKRAINIAN Bar Association, the Portal offers assistance in a number of areas and is supported by attorney volunteers at Reed Elsevier offices around the world.

The Portal allows law firms and corporations to offer job opportunities and legal assistance to Ukrainian lawyers displaced by the war. In addition, a number of external resources are available free of charge via links on the portal. Among the areas addressed by the external resources are donations, international bar association, housing, office space, healthcare and medicine, emotional support, and assistance for Ukrainians living with disabilities.

The site is accessible in both English and Ukrainian.

The portal joins a number of earlier efforts undertaken by LexisNexis Legal & Professional and the Rule of Law Foundation in support of the Ukrainian legal community. Law 360 is providing free access to War in Ukraine, a compilation of daily news items related to all aspects of the conflict, while Lexis Practical Guidance has created the Ukraine Invasion Resource Kit, covering all of the legal issues emerging from the war.

The LexisNexis Rule of Law Foundation is a not-for-profit organization dedicated to advancing the rule of law around the world. The rule of law comprises four key elements: equality under the law, an independent judiciary, publication of laws, and access to remedy. The Foundation seeks to advance the rule of law in one or more of these areas by deploying skills in development projects and working with partners who share the vision of advancing the rule of law and leading the change for better in the world.

Additional information about LexisNexis' activities in support of the rule of law is available at https://www.lexisnexisrolfoundation.org/.

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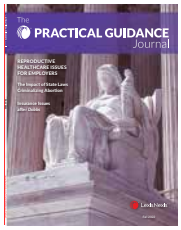

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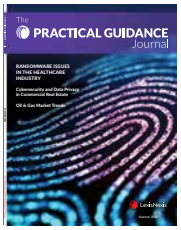

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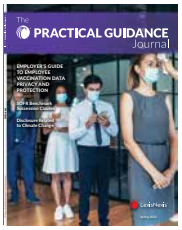

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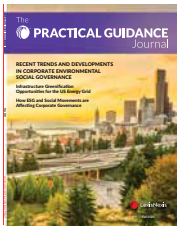

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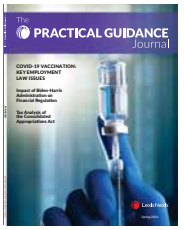

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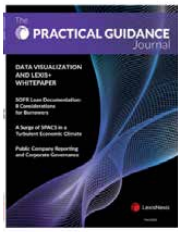

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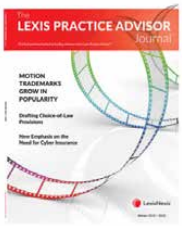

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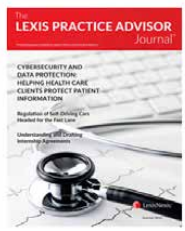

Summer 2016

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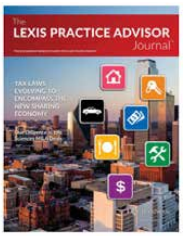

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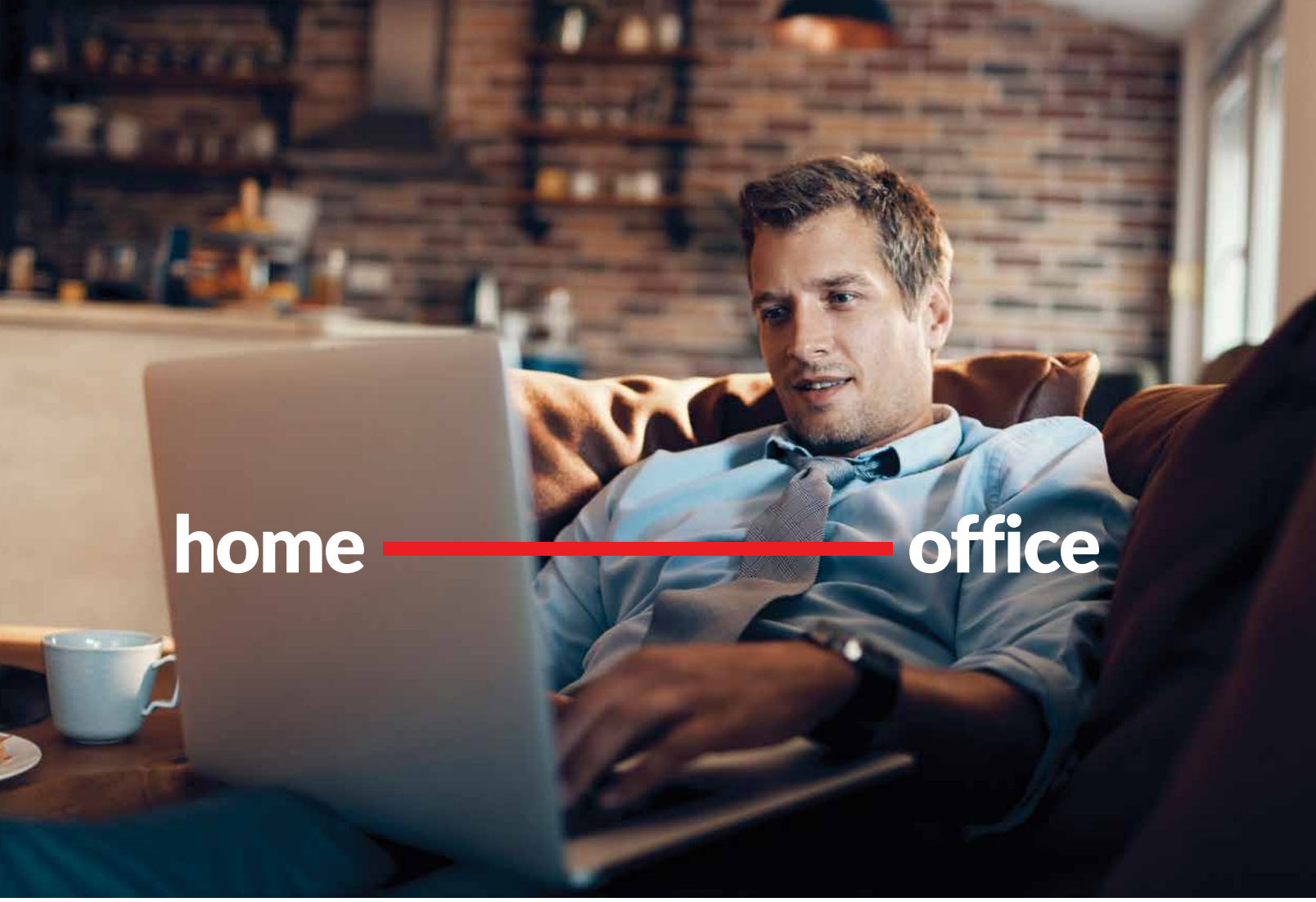

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