

WEBINAR

Oct 30th at 2 PM ET

CLIMATE CHANGE

& The Standard of Care For Design Professionals



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Presenter:
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Today's Agenda

- PUA Overview
- Global Warming, Climate Change and Extreme Weather Events
- The Standard of Care
- Litigation Examples
- Q&A

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PUA Overview

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Learning Objectives

We will discuss the impact of climate change and extreme weather events on property insurance and design professionals' responsibilities. We will learn how these growing risks are affecting owners and developers and how they are reshaping the Standard of Care for design professionals.

We'll cover:

- The design professional's responsibility to mitigate against damage from extreme weather events through thoughtful design
- The potential changes to the Standard of Care to address risks arising from extreme weather events
- Sources of guidance with respect to designing for extreme weather events
- Case law examples related to climate change and extreme weather events

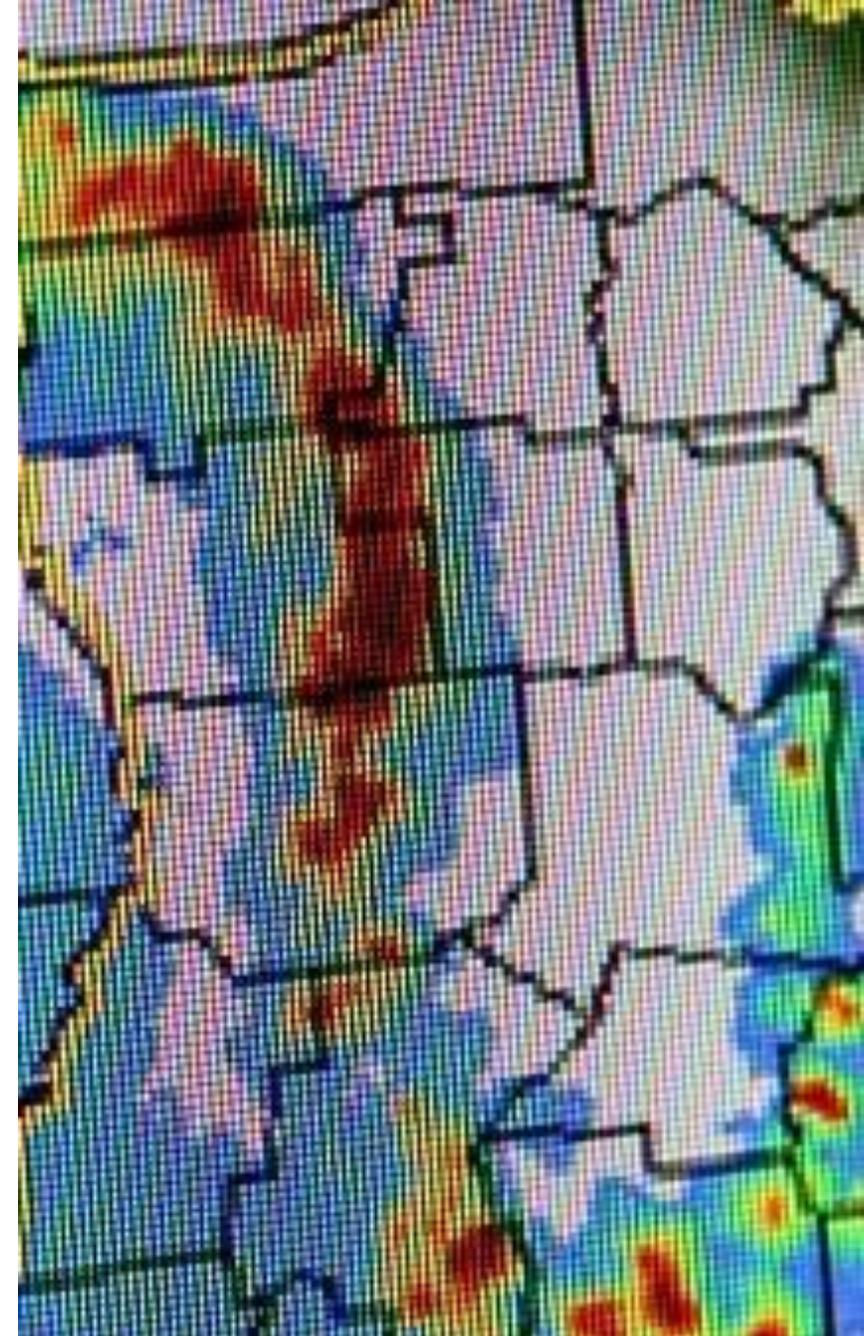


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**Global Warming, Climate Change
and Extreme Weather Events**

Global Warming vs. Climate Change

- While the terms “climate change” and “global warming” are often used interchangeably, they have different, but related, meanings.
 - **Global warming** is the long-term heating of the Earth’s surface due to human activities, primarily fossil fuel burning, which increases greenhouse gas levels in the Earth’s atmosphere.
 - **Climate change** is a long-term change in the average weather patterns. Changes observed in Earth’s climate since the mid-20th century are primarily driven by human activities, particularly fossil fuel burning.

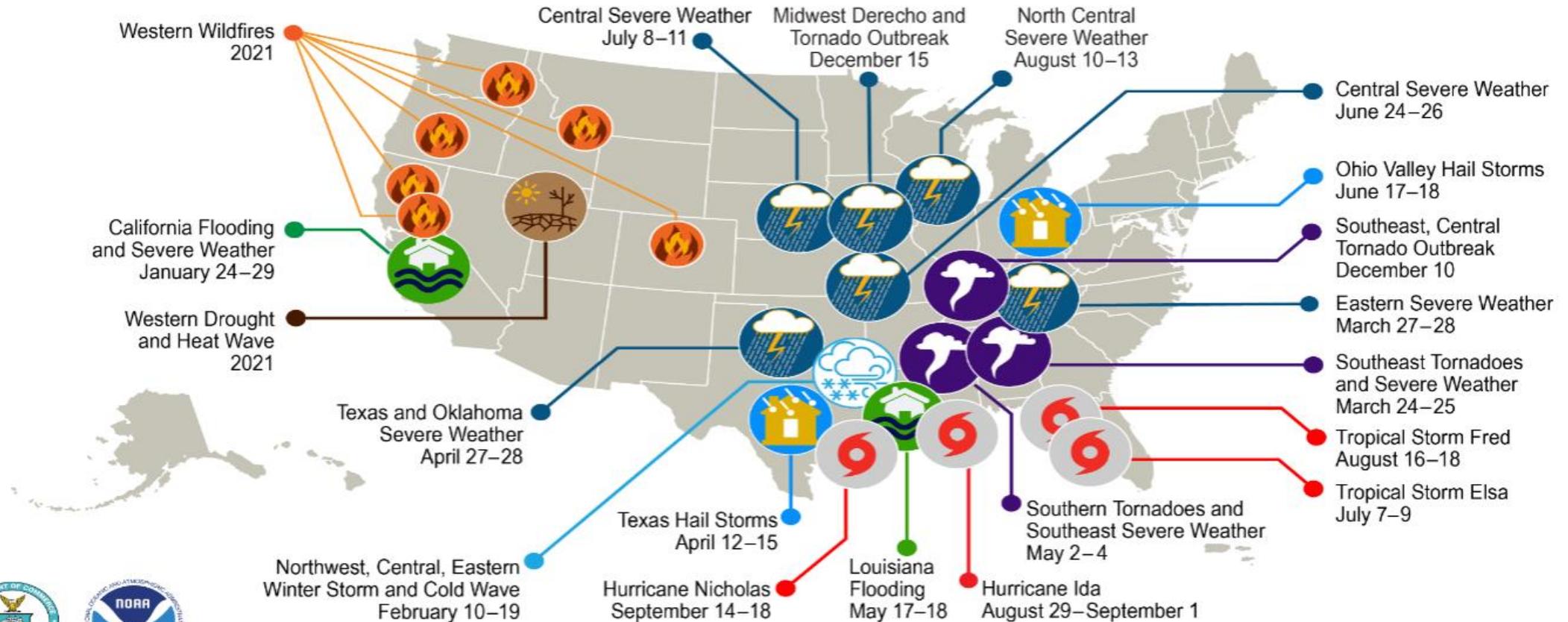
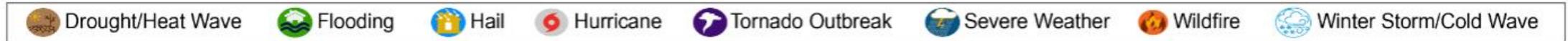


Extreme Weather Events

- Global warming and climate change have been a concern for many years, and while there has been a concerted effort among professional associations to make design professionals aware of how their design choices affect a structure's carbon footprint, extreme weather events are now increasingly getting the headlines.
 - Even though extreme weather events may not be directly caused by climate change, it is generally accepted that climate change is making such events significantly more likely.
 - Extreme events and their severity vary geographically, but there have been catastrophic weather events throughout the US. Looking to the future, it is likely that many areas of this country and the world will face temperature extremes, more frequent and more intense storms (including hurricanes, tropical storms, and snowstorms), more severe droughts, greater risks of wildfires and increased flooding. Coastal areas will be especially prone to flooding because of rising sea levels.

Extreme Weather Events

U.S. 2021 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 20 separate billion-dollar weather and climate disasters that impacted the United States in 2021

Record Number of Americans are Moving to Disaster-Prone Areas – Despite the Risks

In the aftermath of Hurricane Helene—with a death toll of over 250—extreme weather events and natural disasters are on many people’s minds.

- According to a New York Times report, a record number of Americans have been moving to hazard-prone areas in recent years, exacerbating both the severity and costs of natural disasters.
- According to real estate agents, many homebuyers don’t take climate issues that seriously when deciding where to live. Homebuyers typically are not provided & do not seek out information regarding climate risks.
- Nevertheless, natural disasters are increasingly playing a role in homebuyers’ decisions when they are considering either relocating to or from an area that has been affected by events such as hurricanes, wildfires, or flooding. Vacation homes, particularly coastal properties, are also being affected because of issues directly tied to extreme weather and natural disasters. The cost or even availability of property insurance is becoming an issue in many areas.

Potential Extreme Weather Danger Zones

Florida

- Since 2000, more than a dozen hurricanes have made landfall in Florida—and in the past 13 months alone, 3 major hurricanes have hit the state, causing billions of dollars in damage. Even so, Florida gained more than 3 million new residents between 2000 and 2023. The type of buyer moving to coastal or oceanfront properties still feels that the lifestyle is worth the risk.

Arizona

- Phoenix is one of the country’s fastest-growing cities—even though it experienced 100 days in a row with temperatures above 100 degrees Fahrenheit this year. Environmental factors aren’t high on most buyers’ lists of concerns, many people moving to Arizona prefer the heat over snow and ice elsewhere.

California

- California has been plagued by wildfires, landslides, and earthquakes—several insurance companies are not issuing new residential policies and significantly increasing the rates on existing policies. But the state has still seen a large influx of new residents.

Texas

- Texas has attracted millions of people from across the country despite being at high risk for extreme weather events—hurricanes in Houston, tornadoes and hailstorms in Dallas-Fort Worth, and wildfires in Austin. Quality of life and cost of living seem to outweigh the risks.

The Carolinas

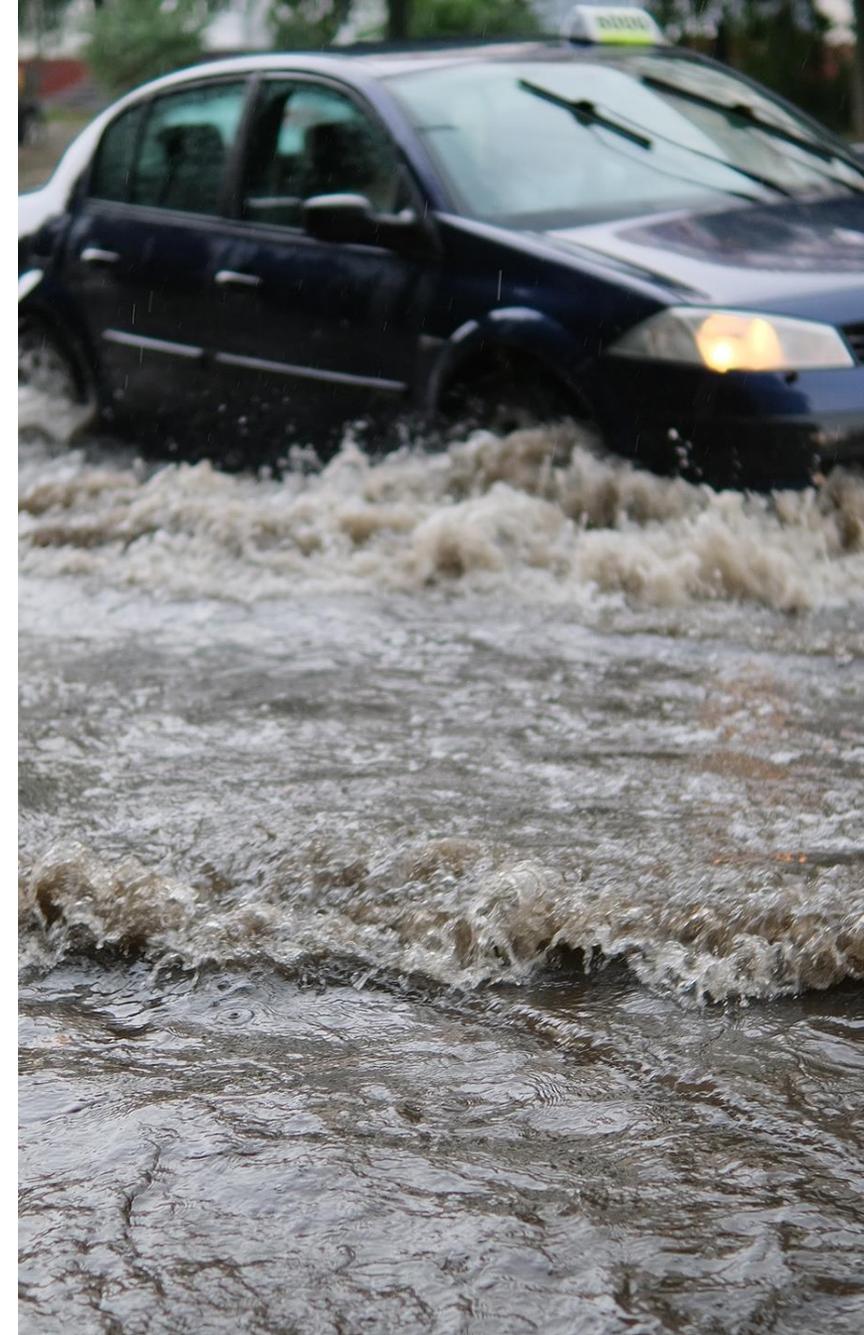
- According to the South Carolina Emergency Management Division, South Carolina is one of the most vulnerable states in the nation with respect to hurricanes and tropical storms. Despite these risks, the Carolinas added 2.5 million citizens from 2000 to 2023. Many buyers consider the risk worth it to live in an otherwise beautiful location.

Flooding

Flooding is the most common type of natural disaster worldwide—about 40% of all natural disasters involve flooding; 75% of all Presidential disaster declarations in the U.S. are associated with flooding. Flooding can have many causes and is often exacerbated by other natural disasters.

- Prolonged periods of drought and excessive heat create a greater risk of wildfire; areas damaged by wildfire are especially prone to mudslides during heavy rains because there is no vegetation to aid in slope stabilization.

Flooding typically occurs when prolonged rain falls over several days, when intense rain falls over a short period of time, or when an ice or debris jam causes a river or stream to overflow onto the surrounding area. Flooding can also result from the failure of a water control structure, such as a levee or dam.



Types of Flooding

The most common cause of flooding is water due to rain and/or snowmelt that accumulates faster than soils can absorb it, or rivers can carry it away.

The various types of flooding include:

- Flash Flooding
- River Flooding
- Storm Surge and Coastal Inundation from Tropical and Non-Tropical Systems
- Burn Scars/Debris Flows
- Ice/Debris Jams
- Snowmelt
- Dry Wash
- Dam Breaks/Levee Failure



Designing for Weather Related Events

Because it is too late to prevent adverse climate changes through mitigation strategies, climate adaptation strategies and increased resilience have become crucial to planning, design, and construction.

- However, while there is considerable data and research on climate resilience strategies and solutions, implementation efforts to date have been limited and largely voluntary, reflecting the political, economic, and social justice implications of climate adaptation.
- Existing regulatory and statutory requirements addressing climate adaptation have not brought about consistently-applied changes in planning, engineering, land use, design, or development practices.
- Nevertheless, stakeholders in construction projects are increasingly recognizing that structures need to be designed to withstand the climate conditions of the future. This leads to the question of whether design professionals can be held liable for failing to anticipate the effects of climate change.

Professional Liability Risks: Extreme Weather Events

- There is not much legal precedent specifically applicable to professional liability risk due to extreme weather events.
- Likely areas of professional liability risk include:
 - Professional Standard of Care
 - Risk Arising Out of Client Design Decisions / Failure to Warn



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The Standard of Care

The Standard of Care

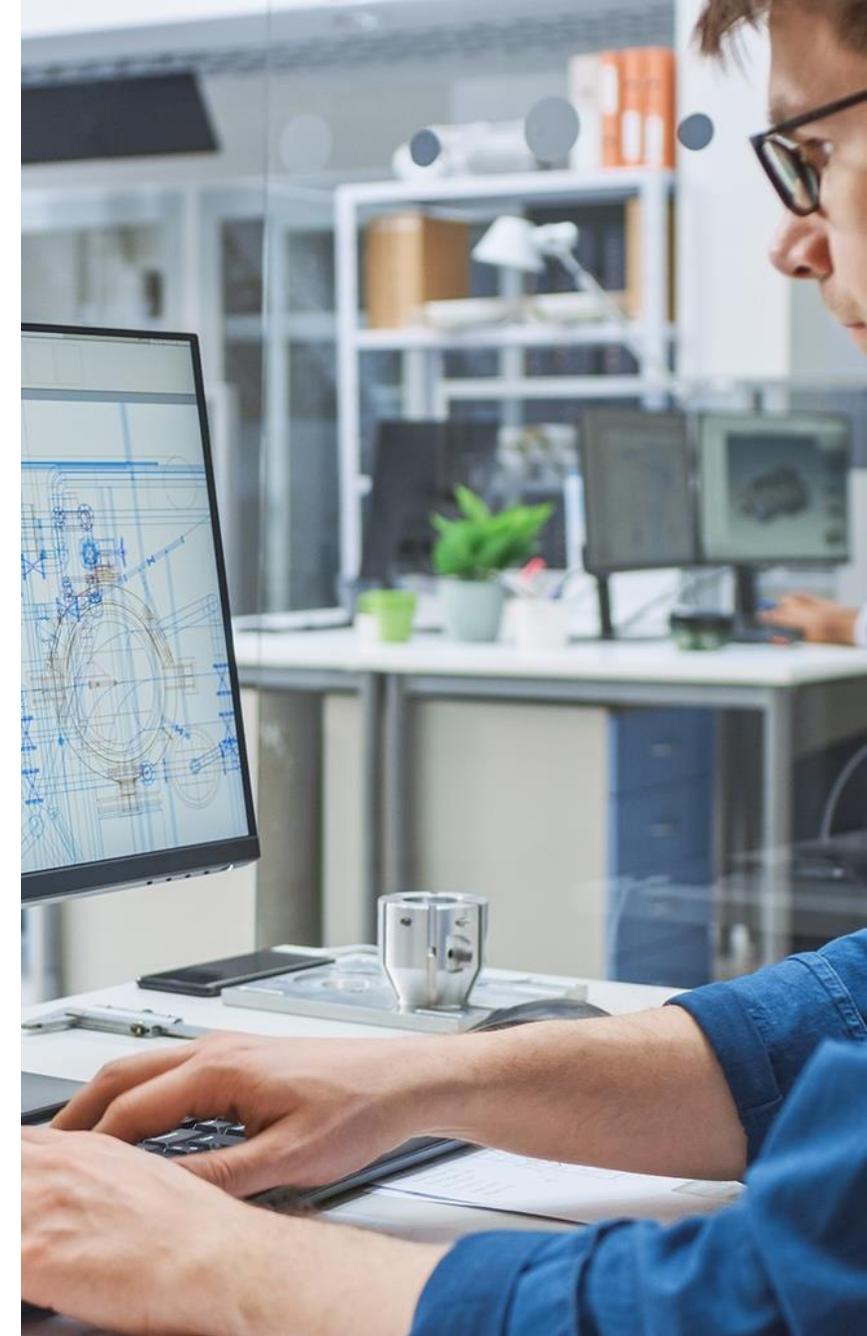
- Most design professionals are familiar with the concept of the “**Standard of Care**” – i.e. the standard to which their services will be held to. Failure to comply with the Standard of Care is negligence.
- The required Standard of Care is expressed slightly differently in the different industry form documents, but the concept is the same:
 - *2.2.1. The standard of care for all design professional services performed by Design Consultant and its Design Sub-Consultants pursuant to this Agreement shall be the care and skill ordinarily used by members of the design profession practicing under similar conditions at the same time and locality of the Project.*

DBIA Document No. 540

Modified Standard Form of Agreement Between Design-Builder and Design Consultant

Designing for Location

- Common to all the formulations for the Standard of Care is the concept that it is tied to location and circumstances. Thus, the Design Professional's Standard of Care could include consideration of the possible effects of climate change at the project location, especially as those effects continue and become more frequently.
- **The importance of location to the Standard of Care is not new:**
 - Seismic concerns are central to many parts of California
 - Designing for expansive clays is required for foundations in many parts of Texas
- What is perhaps new, or at least taking on more importance, is the idea that designs not only need to address current conditions but also anticipated future conditions.



Designing for Location

- A Design Professional can be found negligent and liable to third parties, as well as its Client, if its design fails to consider and protect against foreseeable damage
- Does a design professional have a duty to:
 1. *Consider the future risks that could arise from climate change?*
 2. *Adapt its design accordingly?*
- The challenge with the Standard of Care is essentially a question of foreseeability. Under general tort (negligence) principles, if it is foreseeable that an individual's action or lack of action can cause damage, the individual has a duty to prevent the damage.

Codes & Standards

Compliance with the applicable building code may not be enough to satisfy the Standard of Care with respect to extreme weather events.

Codes and standards that regulate the design of structures incorporate historical weather data to determine how to design for today's conditions. However, historical data may not accurately represent the projected severity and frequency of future (or even current) storms, sea level rise, heat waves and precipitation.

In addition:

- There is a lag time between when the International Building Codes (the I-Codes) are released and when they are adopted by a state as the state building code.
- Although the I-Codes are updated on a three-year cycle, many of the standards they incorporate are updated less frequently.
- Given the time it takes to get consensus agreement on a standard, even the most recently published standards may not be based on the most recent data.

ASCE 24, Flood Resistant Design and Construction

The I-Codes reference ASCE 24, Flood Resistant Design and Construction, which is revised approximately every ten years by the American Society of Civil Engineers. ASCE 24 includes the minimum requirements and expected performance for the siting, design and construction of buildings and structures in flood hazard areas that are subject to building code requirements.

The current version is ASCE 24-14, however ASCE has released proposed updates. The draft was open for public comment until September 26 and should be in its final round of revision.

The updated version of ASCE 24 recommends that buildings in flood design Class 4, such as hospitals and health care facilities that have surgery or emergency treatment facilities, meet a mean recurrence interval (MRI) of 1,000 years.

- ASCE 24 has multiple methodologies for determining the exact requirements for flood-resistant design and construction, but this proposed change will significantly impact the ability to perform new construction and substantial improvements to existing health care facilities.

FEMA (NFIP) Technical Bulletins

Federal Emergency Management Agency (FEMA) accepts ASCE 24 as meeting or exceeding the minimum National Flood Insurance Program (NFIP) regulations for buildings and structures.

The FEMA Technical Bulletins, also referred to as the NFIP Technical Bulletins, provide specific FEMA guidance for state and local floodplain management officials on complying with the NFIP's minimum floodplain management criteria. While the primary focus of the Technical Bulletins is on how to meet the minimum NFIP floodplain management requirements, they also include information on:

- Recommended best practices for reducing flood losses
- Considerations related to NFIP flood insurance rates
- Building codes and standards



Current FEMA Technical Bulletins

There are currently 11 FEMA technical bulletins, including:

- **TB1** - Requirements for Flood Openings in Foundation Walls and Walls of Enclosures Below Elevated Buildings in Special Flood Hazard Areas (2020)
- **TB2** - Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas (2008)
- **TB3** - Requirements for the Design and Certification of Dry Floodproofed Non-Residential and Mixed-Use Buildings Located in Special Flood Hazard Areas (2021)
- **TB4** - Elevator Installation for Buildings Located in Special Flood Hazard Areas (2019)
- **TB7** - Wet Floodproofing Requirements for Structures Located in Special Flood Hazard Areas (2023)

Federal Flood Risk Management Standard (FFRMS)

Unfortunately, Flood Risk Management has become something of a “political football” on the federal level.

Executive Order 136590, issued in 2015, established the Federal Flood Risk Management Standard (FFRMS) “to increase resilience against flooding and help preserve the natural values of floodplains.”

- The FFRMS expanded the floodplain for federally-funded projects to a higher vertical elevation and larger horizontal floodplain area to address future flood conditions in a changing climate. EO 13690 also directed federal agencies to use natural systems, ecosystem processes, and nature-based approaches where possible when developing alternatives. It was issued to encourage federal agencies to consider current and future risk when taxpayer dollars are used to build or rebuild near floodplains.

Federal Flood Risk Management Standard (FFRMS)

- However, Executive Order 13807, issued in 2017, revoked EO 136590 and the regulations that would have implemented the FFRMS.
 - Despite the fact the FFRMS had not been implemented, various federal agencies, including HUD and the US Army Corps of Engineers, continued to require higher standards for construction in flood zones under other legislation / Executive Orders.
- In 2021, EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, revoked EO 13807, beginning the process of reinstating the FFRMS.

FEMA Flood Insurance Rate Maps

Despite progress in recent years, FEMA's Flood Risk management program has faced considerable criticism.

The most common reference for flood risk are the FEMA flood insurance rate maps (FIRMs), also known as 100-year floodplain maps.

- The maps designate land in the 100-year floodplain as so-called Special Flood Hazard Areas. Properties within those zones have a roughly 1% chance of inundation in any given year and are subject to more stringent building codes and regulations that, among other things, require anyone with a government-backed mortgage to carry flood insurance.
- FEMA's flood maps are not always up to date—even though they are required to be reviewed every five years.
- The flood maps do not necessarily account for urban flooding—flooding due to the increased impermeable land in urban areas.
- The flood maps do not account for extreme weather events, which are making floods more frequent and larger.

Other Guidelines/Standards

Design Professionals working on private projects should be aware of laws and guidelines governing public development.

Future plaintiffs could argue that requirements and guidelines for public projects are admissible to attack or to buttress expert opinions on the prevailing Standard of Care for private development.

- An example would be New York’s Climate Resiliency Design Guidelines, which identify climate change risks and appropriate resiliency interventions for city projects—such as raising machinery when building in a potential floodplain. Various other state and cities, including Boston, have developed or are developing similar guidelines.
- Boston Harbor Flood Risk Model (“BH-FRM”). BH-FRM has been adopted by agencies, municipalities and some private entities to augment existing codes.

Changing Standard of Care

As the effects of climate change and extreme weather events intensify and our understanding of these effects evolves, it seems inevitable that there will be impacts on the Standard of Care for design professionals.

- The wording of the Standard of Care will probably not change, but the environmental factors that must be considered to meet the Standard of Care will likely become more important. Relying upon existing zoning, building codes and other regulatory standards in a design may become unreasonable if historic climate information is outdated and not reflective of future or even current climate conditions and risks.
- Design professionals may eventually get assistance in the form of updated code requirements that explicitly take the effects of climate change into account. Currently, however it seems incumbent for the design professionals to be proactive about considering the effects of extreme weather events in their designs and their contracts.



Warranties

- Implicit in the Standard of Care is the concept that design professionals do not warrant that their services be either perfect or defect free. They only warrant that they will comply with the standard set by other design professionals working under the same conditions.
 - Design professionals should be particularly careful about warranting that the project will comply with climate adaptation guidelines that are based on future projections. In most instances, compliance will be significantly affected by the owner's willingness to pay for increased studies and investigations. Compliance will likely increase project costs and will also depend on the contractor's implementation of the design—which the design professional may not have much control over.
 - Design professionals should also be careful about agreeing to obligations that they cannot fulfill without cutting-edge technology. New developments in technology that purport to provide great benefits can carry more risk as the long-term performance of a material or technology may not be well understood.

Duty to Inform the Client (Duty to Warn)

Client-drafted contracts often state the design professional is representing itself as an expert in all aspects of design, which arguably would include risks from extreme weather events.

- Depending on the project type and location, it may be appropriate for the design professional and client to discuss what due diligence is required to determine the appropriate design standards for extreme weather events as well as what modeling might be necessary to determine if the structure should be designed to guard against likely, future climate-related risks.
- Most design professionals do not have expertise in determining the accuracy of climate data, including flood or storm surge maps, and regional climate vulnerability studies. Design professionals are increasingly requiring that the client engage a climate expert to assist with this in the early stages of the design process.

Client Design Decisions and Extreme Weather Events

Ultimately, the client may need to weigh whether the higher costs involved in investigating and designing for extreme weather events against the risk of liability for failing to do so.

Can an owner that is concerned about costs stipulate that the design not address likely risks due to extreme weather?

- Yes ... provided the design complies with the applicable building codes and current design practice, the design professional would probably not be liable to the owner for extreme-weather related damage if the design agreement states that the design professional explicitly disclaims the obligation to design for extreme weather events and the owner assumes the risk of such damages or injury, whether or not it was arguably foreseeable.

Reliance on Owner-Provided Information or Services

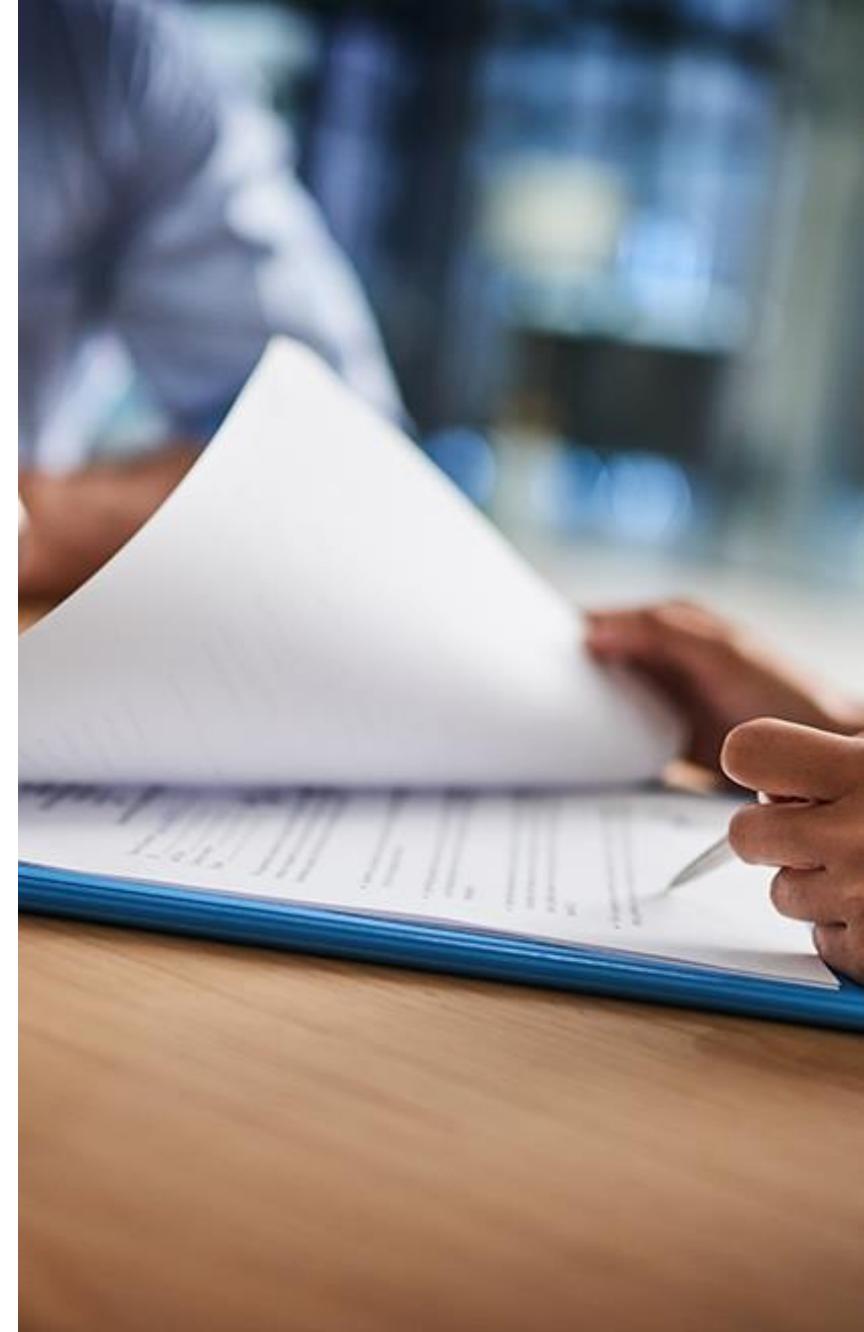
We like to see a provision that says the design professional can rely on owner-provided information in every design contract.

- *§ 3.1.2 ... The Architect shall be entitled to rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of, services and information furnished by the Owner and the Owner's consultants.*

(AIA B103 - Standard Form of Agreement Between Owner and Architect)

Other commonly used wording:

The Consultant shall not be liable for claims arising from errors or omissions in the services and information furnished by the Owner and the Owner's consultants except to the extent the Consultant knew or should have known of such errors or omissions.



Reliance on Owner-Provided Information or Services

If there is the potential for risks due to extreme weather, the design professional could consider adding an explicit statement that the owner is responsible for analyzing risks.

Example:

- The Consultant shall be entitled to reasonably rely on, and shall not be responsible for, the accuracy, completeness, and timeliness of, services and information furnished by the Owner and the Owner's consultants. Owner acknowledges and agrees that the Design Professional cannot anticipate the effects of climate change on the Project's site or environment unless Owner specifically has those possible effects analyzed by a specialized consultant and contractually requires that the effects be considered during the design stage of the project.*

Disclaimer of Responsibility for Assessing Extreme Weather Events

Example:

During the design of the Project, Design Professional shall examine current codes and standards and shall use its professional skill and care to design the Project to meet the requirements of current codes and standards identified as applicable to the Project. Design Professional by training and experience does not possess the expertise to assess the effects of climate change or extreme climate events not addressed by current codes and standards applicable to the Project and assumes no responsibility beyond the professional skill and care in designing to current codes and standards)

- However, failure of a project to address likely extreme weather event may still result in professional liability risk for the design professional as well as its client. Unless the owner also agrees to indemnify the design professional against third-party claims, the design professional could still face liability.

Explicit Disclaimer of Obligations

Disclaimers of specific obligations are not new—see for example, AIA’s disclaimer of LEED certification obligations:

- *§ 6.2 The Owner and Architect acknowledge that LEED Certification is awarded by an independent third-party organization, and is dependent on factors beyond the Architect’s control, such as the Owner’s use and operation of the Project; the Work provided by the Contractor or the work or services provided by the Owner’s other contractors or consultants; or interpretation of LEED credit requirements by the GBCI. Accordingly, the Architect does not warrant or guarantee that the Project will be granted LEED Certification. (AIA B214 – 2012 Standard Form of Architect’s Services: LEED® Certification)*

Other Legal Defense to Claims against Design Professionals

- **Statute of Repose**—bars claims filed more than “x” years after substantial completion or beneficial use or occupancy, where “x” varies from state to state.
- **Statute of Limitations**—bars claims filed more than x years after plaintiff knew or should have known of harm resulting from negligent act.
- **Indemnification Provisions**— the design professional can require the client to indemnify it against claims if the client rejects the design professional’s recommendations.
- **Act of God defense** (i.e., extreme storm was not reasonably foreseeable) may be questionable. It is becoming increasingly difficult to argue that extreme weather events are unforeseeable.

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Litigation Examples

Mitchell v. The Virginia Ry. Co.

- The Sabin Center for Climate Change Law at Columbia University Law School maintains a database of litigation related to climate change around the world. As of now, the database does not include any recent disputes between private entities involving claims brought under tort, property, or contract law alleging that one party's failure to adequately adapt its design to climate change or extreme weather events harmed the other party.
- However, there is precedence for such cases. In a 1935 West Virginia case, the court rejected the notion that flooding resulting from a heavy rainstorm was an act of God because the defendant's railroad bridge was not high enough, and the accumulation of debris caused the stream to flow onto the plaintiff's property. Similar floods had occurred in the recent past and the court stated that the railroad "must provide for such floods as may be reasonably anticipated in view of the history of the stream and the natural conditions affecting the flowage."

(Mitchell v. The Virginia Ry. Co., 183 S.E. 35 (W.Va. 1935))

L.H. Bell & Associates, Inc. v. Granger

- A more recent example is a 1975 Arizona case which provides insight into what courts may consider the responsibilities of a design professional in the context of flooding. In this case, an engineering firm designed a bridge to withstand a 25-year flood per FEMA's guidelines at the time. Even though the bridge withstood a severe flood that was later classified as a 100-year event, the firm was found negligent for failing to foresee that its design created a risk of flooding to adjacent properties.
- The court's decision hinged on the principle that designers must provide services extending beyond the four corners of the contract and there is a broader environmental mandate which requires that designers anticipate the implications of their designs on adjacent properties.
- The case sets a precedent that the standard of care may include anticipating the impact of climate-related events not just to the project itself, but also adjacent landowners, and emphasizes that contractual flood designations are not definitive in evaluating liability.

(L.H. Bell & Associates, Inc. v. Granger, 543 P.2d 428 (Ariz., 1975))

Precedence from Other Design-Related Claims

- Barnett v. City of Yonkers, a 1990 New York case, examined the issue of professional liability in the context of evolving scientific knowledge and its impact on design decisions. Barnett involved an architect who had specified the use of asbestos in the design of a school during the 1950s. The lawsuit arose after a student who attended the school died of mesothelioma in 1986, prompting a review of the architect's liability given the emerging evidence of asbestos hazards. The court concluded that the architect was not liable, as asbestos was commonly used at the time the architect designed the school and its dangers were not widely recognized or documented until after the school was built.

Despite the finding, the decision suggests that courts may find that design professionals who do not address the effects of climate change and extreme weather events may have some liability for damages due the wealth of information on these issues. The case is instructive because it reflects a judicial understanding that design professionals are expected to incorporate contemporary knowledge and understanding of issues that can impact structures and their occupants (*Barnett v. City of Yonkers*, 731 F. Supp. 594 (S.D.N.Y. 1990))

Rejection of the Act of God defense

Just because an extreme weather event may be what is commonly known as an “Act of God,” the design professional may still be liable for failing to design to avoid or mitigate the losses that associated with such an event.

- In a 1972 Colorado case, the Court rejected the defense when a dam that was designed for the maximum probable flood failed due a severe weather event. The Court held that the state could not use this defense since it believed the event that occurred was predictable and foreseeable. (*Barr v. Game, Fish, and Parks*, 497 P.2d 340 (Col., 1972))
- The Court in a 2005 West Virginia case involving damage due to surface water runoff after an extreme weather event defined an “Act of God” is such an unusual, extraordinary and unexpected manifestation of nature that it cannot be reasonably anticipated, guarded against, or resisted. (*In Re Flood Litigation*, 607 S.E. 863 (W. Va 2005))



Conclusion

- While this presentation has focused on the Standard of Care and Liability risks that could arise from a design professional's failure to address extreme weather events, other considerations include reputational risks and strategic risks.
 - Whether or not a design professional is ultimately found liable for a claim, involvement in a project that did not meet the owner's expectations or resulted in alleged damages (however slight) to third parties can damage the design professional's reputation.
 - A design professional that cannot demonstrate a clear understanding of extreme weather options is likely to lose out on business opportunities.

Obtaining CE Credits

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Questions?



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