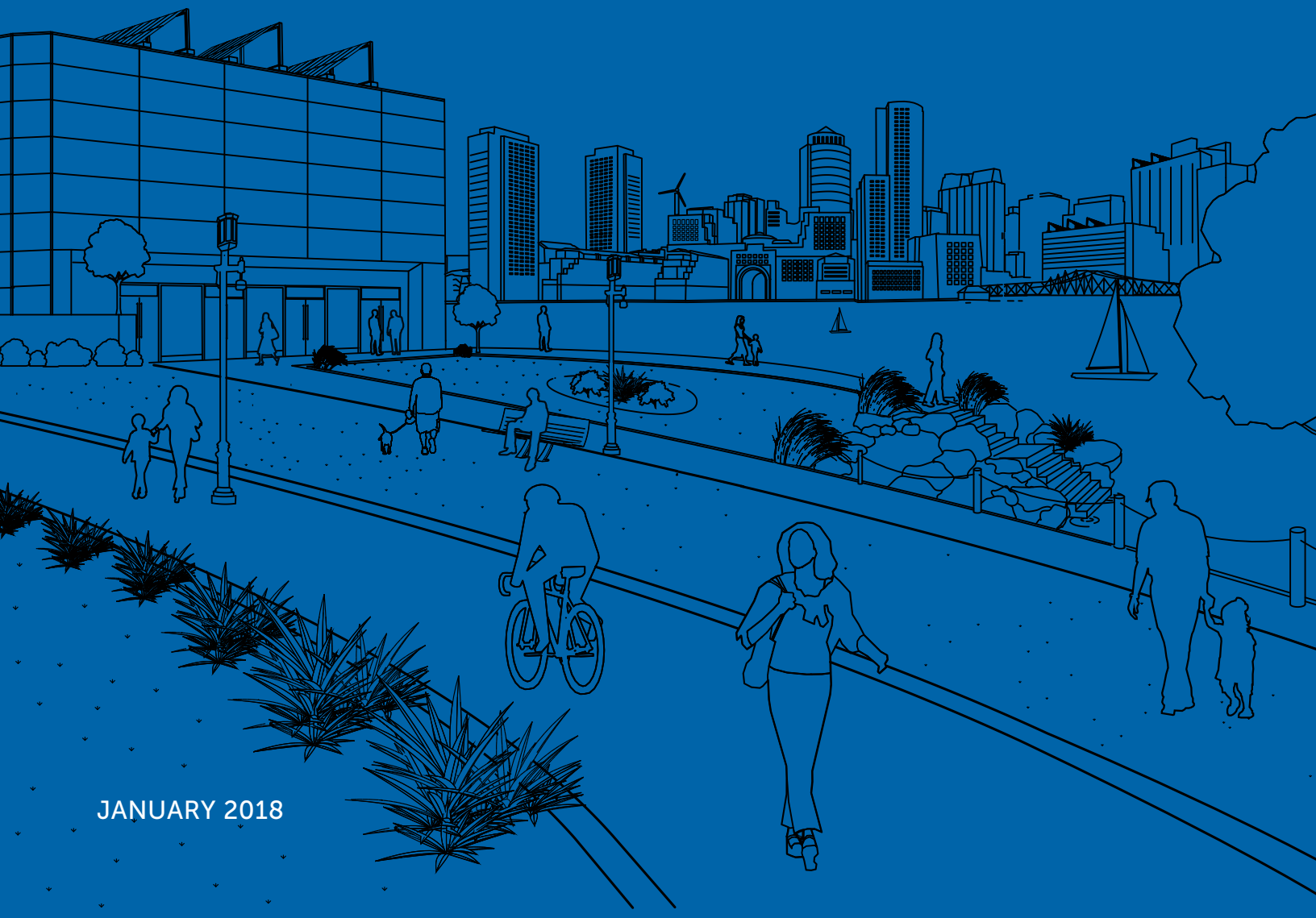
Climate Adaptation and Liability:

A Legal Primer and Workshop Summary Report



JANUARY 2018

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This report was produced by Conservation Law Foundation (CLF) in collaboration with the Boston Green Ribbon Commission. This report was made possible thanks to support from the Barr Foundation.

About Conservation Law Foundation (CLF)

Founded in 1966, CLF protects New England's environment for the benefit of all people. We use the law, science, and the market to create solutions that preserve natural resources, build healthy communities, and sustain a vibrant regional economy. CLF's approach to environmental advocacy is distinguished by our close involvement with local communities; our ability to design and implement effective strategies; and our capacity for developing innovative and economically sound solutions to our region's most critical environmental challenges. Learn more at www.clf.org.

About the Boston Green Ribbon Commission (GRC)

The mission of the GRC is to convene leaders from Boston's key sectors—business, education, health care, non-profit, finance, real estate, professional services, tourism and others—to support the outcomes of the City's Climate Action Plan. The GRC works on a network model and comprises a set of sector-based and initiative-based Working Groups. Together, participants focus on two key strategies: 1) Climate Ready Boston, to help the City become climate resilient and prepared for future impacts of sea level rise, more intense heat, and flooding, and 2) Carbon Free Boston, to develop policy and technology pathways that will enable Boston to reach its goal of net zero carbon by 2050.

Acknowledgment

CLF is grateful to the Barr Foundation for supporting these workshops and this work. In developing this workshop and summary Report, CLF collaborated with Amy Longsworth and John Cleveland from GRC as well as BSA staff and our workshop planning committee members, including representatives from Boston Harbor Now, the Boston Planning and Development Agency, the City of Boston Environment Department, Harvard Graduate School of Design, Center for Urban Watershed Resilience, Noble, Wickersham & Heart LLP, Architerra Inc., and Arup. We would also like to thank Aladdine Joroff and the Harvard Law School Emmett Environmental Law and Policy Clinic for their support in developing the legal content of this Report. The authors are grateful for everyone who helped make these workshops and this Report possible.

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The authors acknowledge the assistance of Aladdine Joroff of the Harvard Law School Emmett Environmental Law and Policy Clinic in drafting this Report.

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Overview

Our climate is changing, and new scientific evidence suggests that the scale and pace of climate change impacts could be even greater than originally expected.[1] While the impacts of climate change and their severity vary geographically, we know that New England will face higher temperatures, increased heavy precipitation events, a rising sea level, and more intense storm events.[2] In fact, New England is expected to experience greater warming over the next few decades than any other part of the country except Alaska due, in part, to the region's high latitude and the rapid warming of the Gulf of Maine, the fastest-warming body of water in the world.[3] These climate conditions will have an extraordinary impact on our built environment. The recognition that it is already too late to avert significant and adverse climate changes through mitigation strategies,[4] and new tools to model and assess climate risk for communities and regions, have attached new urgency to the role of adaptation strategies in regulation, planning, design, and other disciplines.

As of 2015, thirty-four U.S. states had climate action plans, with many more cities and towns involved in climate planning efforts of their own.[5] While it seems that data and research on climate resilience strategies and solutions are abundant, implementation efforts have been limited and largely voluntary, reflecting the range of political, economic, fiscal, and social justice implications of adaptation at a community or regional scale.

In many places, including Massachusetts, there is an emerging but limited patchwork of regulatory and statutory requirements that purport to address climate adaptation, but none of these requirements have brought about noticeable change in planning, engineering, land use, design, or development practices. The prevailing practice, even for most critical infrastructure,[6] is to design and build according to the climate patterns of the past rather than those observed in the present or anticipated imminently. This has significant implications for public health and safety, for the integrity of communities at risk, and the resilience of our economy to extreme and catastrophic weather.

The omission of climate risk in prevailing practices, and omission of explicit standards for climate risk in extant laws and regulations, are relevant to but not dispositive of the issue of legal responsibility for harm that may result from failure to act reasonably in the face of ascertainable climate risk. Statutes and rules often impose general duties to reduce risk and take reasonable precautions, and these obligations can be heightened when considerations of public health or safety are implicated, as in the case of facilities handling oil or hazardous substances. Tort liability presents another

[1] National Oceanic and Atmospheric Administration. (2016). Artic Report Card: Update for 2016. Retrieved from: http://www.arctic.noaa.gov/Report-Card/Report-Card-2016

[2] U.S. Global Change Research Program. (2014). *The Third National Climate Assessment*. Retrieved from: http://nca2014.globalchange.gov/report/regions/northeast; Abel, D. (2017, August 9). Climate Change Will Hit New England Hard, Report Says. *The Boston Globe*. Retrieved from: https://www.bostonglobe.com/metro/2017/08/09/climate-change-will-hit-new-england-hard-report-says/064xm0Cjuewy1PzD5zkZCP/story.html.

[3] Abel, D. (2017, January 13). Northeast warming more rapidly than most of US. *The Boston Globe*. Retrieved from: https://www.bostonglobe.com/metro/2017/01/12/northeast-will-experience-faster-warming-from-climate-change-new-study-finds/nitce6eK8zqQN2LXZXgvwK/story.html.

[4] R.K. Pachauri and L.A. Meyer (2014). *Climate Change 2014: Synthesis Report*. Report prepared for the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Geneva, Switzerland. Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

[5] Center for Climate and Energy Solutions. (2017). *Climate Action Plans*. Retrieved from: https://www.c2es.org/us-states-regions/policy-maps/climate-action-plans (last checked: October, 2017).

[6] United States Agency International Development. (2013). *Addressing Climate Change Impacts on Infrastructure*. Retrieved from: http://www.adaptationlearning.net/sites/default/files/resource-files/Addressing-Climate-Change-Impacts-on-Infrastructure-report.pdf.

avenue of potential liability, and courts have often considered prevailing scientific understandings about the nature of risk in determining whether and to what extent a party in a position to mitigate risk may have a duty of care with respect to a given hazard. Liability has already been explored as a basis to compel climate mitigation,[7] but less attention has been paid to liability as a basis to compel climate adaptation.

In May 2017, Conservation Law Foundation (CLF), Boston Green Ribbon Commission (GRC), and Boston Society of Architects (BSA) convened two workshops bringing together over 60 experienced industry professionals from diverse professional backgrounds. The workshops focused on the legal implications of failing to adapt to known climate risks for both government entities and private sector professionals and the potential obstacles to considering and designing for climate risks. Workshop participants were asked to identify and think through on-the-ground barriers to adaptation and what role law and policy plays in encouraging or discouraging adoption of climate adaptation and resilience strategies.

The purpose of the workshops and this Report has not been to identify climate resilient design strategies or regulatory solutions. Rather, the focus has been on how potential liability may advance or inhibit implementation of known and well-developed adaptation approaches. Why are so many climate adaptation plans sitting on shelves collecting dust? What is stalling implementation efforts, and what realities are serving as barriers to success? Understanding climate-related liabilities could be an important lever for moving implementation efforts forward, gaining political buy-in, and overcoming present barriers. We are unaware of any multi-disciplinary discussions to date about climate liability as it pertains to adaptation in the Northeast.[8] This series and workshop summary seek to begin addressing this gap and to foster much-needed dialogue on this important topic.

This workshop summary is broken into several parts. Parts I through III provide a primer on the main theories of legal liability that could come into play if a design professional or public official failed to adequately undertake climate adaptation measures resulting in harm. These sections include case law that was presented to participants at each workshop as well as a deeper look at relevant legal trends and theories specifically for this Report. This primer is not intended to be an exhaustive analysis of existing case law, but rather an introduction with relevant examples of the types of claims that could arise when parties do not adequately prepare for climate change.[9]

Part IV of this Report synthesizes the conversations and discussions of participants during each of the half-day workshops. We note that the majority of the assertions in Part IV reflect the views of participants and are therefore not supported by citations. In addition, measures identified by participants during group discussion are the ideas of participants and have not necessarily been vetted for viability nor do they necessarily reflect the views of CLF, GRC, or BSA. The agenda for the workshop and the full participant list are included in the Appendices at the end of this Report.

These workshops took place in Boston and therefore references to specific laws and regulations are primarily those in Massachusetts. However, these concepts and themes, including much of the legal background, is applicable to other parts of the country as well.

The Report concludes with recommended next steps for addressing the existing barriers to implementation of climate adaptive solutions.

[7] *See, e.g., American Electric Power (AEP) v. CT*, 131 S. Ct. 2527, 41 ELR 21202 (2011); *Native Village of Kivalina v. ExxonMobil Corp.*, 2012 WL 4215921 (2012); Comer v. Murphy Oil USA, Inc., 607 F.3d 1049, 40 ELR 20147 (2010).

[8] DLA Piper held workshops in 2013 on Climate Change and Law in Suva, Fiji and Apia, Samoa, which specifically looked at the issue of adaptation. A copy of the workshop report is available at: http://files.dlapiper.com/files/Uploads/Documents/climate-change-adaptation-guided-by-the-law.pdf.

[9] For an in-depth database of U.S. and international climate change litigation, we recommend Columbia Law School's Sabin Center for Climate Change Law's "Climate Change Litigation Database," available at: https://tinyurl.com/y9bnj8y8.

PART I:

Legal Liability of Design Professionals for Failure to Adapt

I. COMMON LAW TORTS

In brief: *Parties that are injured by a design professional's failure to build a structure sufficient to withstand known climate change related impacts may be subject to liability for damages under the common law torts of negligence and nuisance, among others. In reviewing liability for negligence, courts will look at the reasonableness of the design professional's behavior given the circumstances. For nuisance claims, a court will examine whether the claimed activity (e.g., flooding) unreasonably interfered with a party's use or enjoyment of his property. Statutes of limitation and repose, and various defenses to tort liability may impact the outcome of these claims.*

A. Negligence: Duty of Care

Negligence claims reflect and enforce the generally accepted principle that everyone should act in a reasonable way so as not to injure those around them. To establish a negligence claim in court, an injured party must first establish that the person or entity causing the harm had an obligation or "duty" to behave in such a way as to avoid the harm. This duty is often called the "standard of care," and professionals such as doctors, teachers, etc. must meet this standard of care when acting in their professional capacity. Average citizens are also held to a certain duty of care.

Often, courts articulate the standard of care as the behavior of another similarly situated person (professional, or otherwise) acting in an objectively reasonable way. For instance, the Georgia Supreme Court defined the duty of design professionals as an "obligation to exercise a reasonable degree of care, skill, and ability, which generally is taken and considered to be such a degree of care and skill as, under similar conditions and like surrounding circumstances, is ordinarily employed by their respective professions."[10] Sometimes this duty is called the "reasonableness standard," for it essentially asks how a reasonable person in similar circumstances would act.

In addition to establishing a "duty," an injured party must prove three other elements to prevail in a negligence claim: breach, causation, and harm. That is, the injured party must not only show that the person or entity had a duty to act a certain way, but must also prove that the person or entity *breached* the duty, and the breach was the *cause* of the *harm* to the injured party. However, the focus of this legal overview is the duty element, since it is the element most susceptible to shift based on current circumstances and what one knows or should have known about climate change.

To apply the "reasonableness standard" set out above, courts must look at relevant evidence to determine what a reasonable design professional would have done under similar circumstances. In conducting this inquiry, courts review a variety of factors, including the following:

1. Standards in a Contract

A contract may contain clear, written standards to which a design professional must adhere—failure to do so could result in a breach of professional duty. For example, a contract may require hurricane straps on a building, or that infrastructure like a bridge should be constructed to a twenty-five-year design life. These contractual terms establish a legal duty to which a design professional must adhere to avoid being vulnerable to negligence liability.

[10] *Bodin v. Gill, 117* S.E.2d 325, 330 (Ga. 1960).

2. Knowledge of Climate Change Impacts

Knowledge of climate change impacts could be used to establish a legal duty. For example, if publically available storm surge maps indicate that a structure could flood during the lifespan of a building, a design professional would likely have a duty to build the project to withstand that flooding, or at least inform the client of the issue. Moreover, a design professional could be found liable if harm results from designing a structure based on floodplain or other maps that the professional knew or should have known misrepresented risks, given climate projections.[11]

Thus, when planning a project, design professionals should discuss with the Owner the level of due diligence required to determine the appropriate design standards for climate resilience. It may be necessary to conduct research on publicly available weather data and projections as well as climate impact maps and models to determine if the building should be designed to guard against certain known or highly likely future climate impacts. Also, as a matter of good practice, design professionals should consult with appropriate professionals to determine the accuracy of climate data, including flood or storm surge maps, and regional climate vulnerability studies. Design professionals, especially architects, are increasingly employing climate experts to assist with this stage in the design process.

3. Applicable Codes and Regulations

Design and engineering professionals should pay special attention to any applicable codes and regulations for design or construction, since failure to do so could result in negligence *per se*.[12] Even where applicable statutes, codes, and regulations, or the permits issued under them make no explicit reference to climate or weather risk, they may include narrative requirements (such as a duty to take reasonable care), general duties (e.g., to use best engineering practice), or references to privately developed codes, any of which may import a duty to identify and address risks, like climate risk, that are well understood and reasonably quantifiable for purposes of design and construction.

Moreover, compliance with explicit regulatory requirements does not necessarily shield a design professional from liability, since many building and design regulations may not incorporate climate changes that have occurred or become evident since enactment or adoption of the statute or regulation, or that are anticipated during the expected life of the project or permit timeframe.

Some countries have recognized this shortcoming. For example, according to the Australian Building Codes Board, the Building Code of Australia is "likely to be deficient in some areas" in the event of "climate changes in accordance with high emissions scenarios."[13] Similarly, Australia's National Construction Code does not account for "hail, storm tide, or have specific

[11] See, e.g., *Uhley v. Tapio Const. Co.*, 573 So. 2d 390, 391 (Fla. Dist. Ct. App. 1991) (contractor who relied on survey prepared by third party with specifications that were marked as "assumed" and "assigned" had an independent duty (i.e., standard of care) to ensure the correctness of that information, and therefore was liable for flood damages from negligent design.

[12] The rule of negligence *per se* states that if a defendant's action violated a law or regulation, then the court will consider the action to be negligent without asking whether or not a reasonable person would have done the same thing. That is, the court presumes a breach of duty occurred, and moves on to assess what (if any) damages occurred as a result of that breach. The rule of negligence per se states that if a defendant's action violated a law or regulation, then the court will consider the action to be negligent without asking whether or not a reasonable person would have done the same thing. That is, the court presumes a breach of duty occurred, and moves on to assess what (if any) damages occurred as a result of that breach.

[13] Australian Building Codes Board. (2014). *Resilience of Buildings to Extreme Weather Events*. Retrieved from: https://www.abcb.gov.au/Resources/Publications/Consultation/Resilience-of-Buildings-to-Extreme-Weather-Events.

requirements relating to heat stress."[14] The joint Australia-New Zealand Design Standards expressly acknowledge that regarding wind speed calculations, "[n]o account has been taken of any possible future trend in wind speeds due to climate change."[15]

In the United States, most states (including Massachusetts) have adopted the International Building Code ("IBC"), either in full or with amendments, yet the IBC fails to account for sea level rise or climate change more generally.[16] Thus, while zoning, building codes, and other regulations can help determine the appropriate standard of care, compliance alone with these laws will not shield a design professional from liability for damages resulting from failure to account for climatic changes not considered or evident at the time of code adoption.

4. Industry Custom

Similarly, while the prevailing industry custom may offer courts a useful guide to establish the appropriate standard of care, even a pervasive practice may not meet the relevant standard of care. In a landmark admiralty case called *T.J. Hooper*, a tugboat owner sought to limit his liability after losing the cargo of two barges in a storm.[17] The tugboat at issue in the case, like most tugboats at the time, lacked a functioning radio that could have received the daily weather report warning of the impending storm.[18] The court nevertheless rejected mere compliance with industry custom as a defense to liability. As the famous federal Appeals Court Judge Learned Hand wrote, "[A] whole calling may have unduly lagged in the adoption of new and available devices . . . Courts must in the end say what is required; there are precautions so imperative that even their universal disregard will not excuse their omission."[19] Thus, adherence to common industry practice does not foreclose liability.[20]

5. Foreseeability of the Harm

Whether the harm that occurred was *foreseeable* can also be an important factor in establishing negligence. Foreseeability is one of the most complex concepts in negligence, but distilled to its core, it is the ability of the party being blamed for the injury to have anticipated that such an injury could occur. It is not a question of whether the party *actually* did foresee the injury, but whether she should have seen that such an injury could occur.

Of particular note for climate change risk, an event need not have actually occurred in the past for a court to find that it was foreseeable that it could occur in the future. For example, an Illinois appeals court held an engineer liable for negligently designing a cement pylon that collapsed due to high winds onto a customer as she entered a shopping mall, despite the fact that such high wind speeds had never been recorded at the site.[21] The court decided the engineers could have predicted the high winds with existing technology, and that the engineers "failed to exercise that degree of care in the performance of professional duties imposed upon them as members of a licensed profession which exists in large part to prevent harm to the public from structurally unsafe buildings."[22]

[14] *Id*. at 9.

[15] Council of Standards Australia and Council of standards New Zealand. (2011). *Structural Design Actions Part 2: Wind Actions*. Retrieved from: https://shop.standards.govt.nz/catalog/1170.2:2011(AS%7CNZS)/scope.

[16] International Code Council. (2015). *International Building Code*.

[17] *The T.J. Hooper*, 60 F.2d 737, 737 (2d Cir. 1932).

[18] *Id*. at 739.

[19] *Id*. at 740.

[20] There are instances, however, in which compliance with industry standard is "relevant, if not conclusive, evidence." *See, e.g., Rutherford v. Lake Michigan Contractors, Inc.*, 28 F. App'x 395, 398 (6th Cir. 2002) (allowing deckhand to handle steel cable on his own did not establish owner's negligence, in part because such conduct was standard industry practice).

[21] *Laukkanen v. Jewel Tea Co.*, 222 N.E.2d 584, 587 (Ill. App. Ct. 1966).

[22] *Id*. at 588.

Another important point about foreseeability is that design professionals may be expected to design around circumstances that are not identified in a particular contractual agreement. That is, even when a design professional fulfills her contractual duties, she may still have a duty to account for reasonably foreseeable events.[23] Thus, merely fulfilling the terms of a contract may not be enough to shield a design professional from negligence liability when reasonably foreseeable risks are ignored.

B. Negligence: Defenses

A design professional has numerous possible defenses to a negligence claim. One common complete defense to a negligence claim is termed "assumption of the risk." This defense is available when an injured party either expressly or impliedly consented to the risk of injury.[24] This means that where a design professional identifies to the client that climatic changes may create a risk of structural damage, and the client chooses to go forward with the design, the design professional may have a defense to a negligence claim from the client (but unless the client also indemnifies the design professional, this would not apply to claims by third parties).

Furthermore, because Massachusetts is a "comparative fault" jurisdiction, plaintiffs' ability to recover damages for a negligence suit will be limited if the plaintiffs contributed to the harm.[25] This defense may appear in a climate change damages scenario where both the designer and the property owner played a role in relying, for example, on outdated flood maps which led to the flooding of a home.

C. Nuisance

To be awarded monetary damages in a nuisance claim against a design professional, actual harm must occur; however, some courts will consider injunctive relief (an order to do something) to prevent likely *future* harm to a plaintiff.[26] A successful nuisance claim may need to establish that the design professional had "strict control" over the property causing the nuisance.[27] A design professional may also be sued for nuisance *per se* if the conduct causing the nuisance violates a specific statute or regulation.[28]

Thus, design professionals should be careful not to implement a project that could unreasonably interfere with a party's use or enjoyment of the property as a result of anticipated climatic changes, such as increased flooding, higher temperatures, and sea level rise. For example, including a basement in the design of a building and failing to account for climate impacts could cause harm to the client if it is likely to be subject to chronic flooding from rain storms or increased high tides. Such chronic flooding could cause significant damage to the property by way of mold and other issues and even make the space unusable.

[23] *See, e.g., L. H. Bell & Assocs., Inc. v. Granger*, 543 P.2d 428, 433 (Ariz. 1975) (though an engineer's bridge design met contractual standards, the engineer negligently failed to protect against foreseeable flooding of neighboring properties).

[24] *See, e.g., Stelluti v. Casapenn Enterprises, LLC*, 1 A.3d 678, 695 (N.J. 2010) (gym patron who signed a contract assuming the risks of using the facility released the owner from liability, even when an exercise bike broke and injured the patron).

[25] *See, e.g., Cigna Ins. Co. v. Oy Saunatec, Ltd.*, 241 F.3d 1, 16–17 (1st Cir. 2001) ("In a negligent design action, a defendant may always prove comparative negligence in an attempt to reduce or prevent recovery").

[26] *See, e.g., Prah v. Maretti*, 321 N.W.2d 182, 187 (Wis. 1982) (owner of a solar-heated home successfully sued under private nuisance to prevent neighbor's proposed construction of residence that would block sunlight, claiming unreasonable interference in the use and enjoyment of his property).

[27] *See Long v. O'Reilly's Auto. Stores, Inc.*, No. CV 6:12-901-MGL, 2013 WL 12148122, at *4 (D.S.C. Mar. 7, 2013) (engineering firm not liable for nuisance claim resulting from drainage pipe flooding neighbor's property because the firm lacked "strict control" over offending property).

[28] *Shurpin v. Elmhirst*, 195 Cal. Rptr. 737, 741 (Cal. Ct. App. 1983); *see also* discussion of negligence per se above.

D. Limitations on Tort Liability and Protection through Indemnification

Certain limitations on liability may shield design professionals from negligence actions, or indemnify them for damages to some extent. Most jurisdictions have laws that prohibit suits after a certain number of years from the completion of the design (called "statutes of repose"), or after a given amount of time has elapsed since the damage became known (called "statutes of limitation"). Massachusetts, for example, has a six-year statute of repose for tort actions arising from improvements to real property—that is, claims against design professionals cannot be made more than six years after a project is put into use, or "substantially completed" and occupied by the owner.[29] Massachusetts' statute of limitations for tort actions is three years from the date that "a plaintiff knows or reasonably should know that it has sustained appreciable harm as a result of the defendant's negligence."[30]

Design professionals employed by the federal or state government may enjoy an added layer of protection against negligence related tort claims through sovereign immunity.[31] Whether or not the protection applies will depend on the type of act or omission alleged in the tort claim, and the status of the employee. For instance, the Federal Tort Claims Act ("FTCA")[32] provides a cause of action against the United States (i.e., the Government's sovereign immunity is waived) for injury caused by the negligent or wrongful act or omission of any employee of the Federal Government—such as a government contractor.[33] In addition, the Government is not liable for injury caused by the negligent or wrongful acts of an independent contractor, and the contractor does not have the protection of sovereign immunity.[34] An *independent contractor* is one whose "day-to-day operations" are not supervised by the Federal Government.[35] State tort claims acts typically offer a similar exception for independent contractors, including the Massachusetts Tort Claims Act.[36] In Massachusetts, the government is protected from the acts of an independent contractor, and the independent contractor does not have the protection of sovereign immunity.[37]

Finally, errors and omissions ("E&O") insurance may be available to indemnify design professionals for negligence claims; however, these policies invariably have limits and exclusions pertinent to climate risk.

II. CONTRACT LAW

In brief: *a contract between the design professional and another party can serve as the basis of a claim for liability if, for example, a certain provision related to climate preparedness (e.g., roof strength able to withstand a certain amount of snowfall) was not satisfied.*

A design professional can be sued for breach of contract. For instance, if a contract requires the design professional to build a stormwater system that can handle

[29] MASS. GEN. LAWS. ch. 260, § 2B (2017).

[30] MASS. GEN. LAWS. ch. 260, § 2A (2017); *Massachusetts Hous. Opportunities Corp. v. Whitman & Bingham Assocs., P.C.*, 983 N.E.2d 734, 737 (Mass. App. Ct. 2013).

[31] The concept of sovereign immunity is discussed below in Part III.

[32] The FTCA is discussed below in Part III.

[33] *See, Heinrich ex rel. Heinrich v. Sweet*, 83 F. Supp. 2d 214, 216 (D. Mass. 2000), *aff'd sub nom. Heinrich v. Sweet*, 308 F.3d 48 (1st Cir. 2002).

[34] *Id.*

[35] *Id.*

[36] MASS. GEN. LAWS ch. 258, § 2 (2017).

[37] *Ku v. Town Of Framingham*, 816 N.E.2d 170, 175 (2004).

a certain designated storm size and the system is built below that capacity, there may be a breach of contract claim. It is noteworthy that a claim can be brought if a party can prove that an element of the contract was not fulfilled, even if no harm has occurred.

However, a number of defenses are available to a defendant design professional against breach of contract cases. This Report does not cover all of those defenses, but a relevant example could be where a statute of limitations bars a suit for breach of contract against a contractor resulting from structural defects in a building (e.g., the building was found to not be able to withstand average wind speeds in the area—breaching a provision of the contract). However, the property owner may still be able to bring a claim if those defects were "inherently unknowable" at the time the contract was breached, in which case the statute of limitations begins to run when the defect was or reasonably should have been discovered.[38]

III. STATUTORY AND REGULATORY REQUIREMENTS

In brief: *Mandatory duties contained in statutes or regulations could be a mechanism by which an outside party (e.g., a buyer of a property, or a concerned neighbor) compels a design professionals to undertake climate adaptation measures in the construction of a building.*

Design professionals may also be held liable for failing to adequately consider climate change in infrastructure design plans based on requirements in federal or state statutes or their implementing regulations.

For example, the nonprofit environmental advocacy organization Conservation Law Foundation ("CLF") recently sued ExxonMobil, Inc. under the Clean Water Act and the Resource Conservation and Recovery Act. The Clean Water Act counts allege, among other violations, that ExxonMobil[39] failed to comply with regulations and permit language requiring that oil production and storage facilities be built, maintained, and inspected "in accordance with good engineering practice."[40] CLF contends, in part, that because ExxonMobil failed to consider current or imminent increases in intense precipitation, more intense storms, rising seas, or other extreme weather in its management of the facility, it has not met the regulatory standard of good engineering practice.[41] CLF further alleges that actions in accordance with good engineering practices would necessarily contemplate how climate change impacts like these might cause or exacerbate potential spills at the oil terminal.

On September 13, 2017, the United States District Court for the District of Massachusetts denied ExxonMobil's first Motion to Dismiss the case in its entirety due to CLFs purported lack of standing.[42] The judge noted in the order that CLF stated "a plausible claim that there is a 'substantial risk' that severe weather events, such as storm surges, heavy rainfall, or flooding, will cause the terminal to discharge pollutants into [nearby communities] in the near future and while the [Clean Water Act] Permit is in effect." Therefore, with respect to claims concerning such harms to plaintiffs' recreational and aesthetic interests, the case may proceed to trial.

The District Court granted ExxonMobil's Motion to

[38] *See, e.g., Melrose Hous. Auth. v. N.H. Ins. Co.*, 520 N.E.2d 493, 497–98 (Mass. 1988) (defects in construction of a building's wall were not "inherently unknowable" to the owner, and thus the statute of limitations was not tolled, barring the owner's breach of contract claim).

[39] In part, the Complaint alleges that it was the unreasonable conduct of *engineers* employed by ExxonMobil that amounted to the Clean Water Act permit violation.

[40] Compl. for Declaratory and Injunctive Relief and Civ. Penalties at 59–60, *Conservation Law Foundation, Inc. v. ExxonMobil Corp.*, No. 1:16-cv-11950-MLW (D. Mass. Sept. 29, 2016).

[41] *Id*.

[42] Thompson, I. (2017, September 12). US Court Allows Suit Alleging ExxonMobil's Everett Tank Farm is a Hazard to Proceed. *WGBH News*. Retrieved from: http://news.wgbh.org/2017/09/12us-court-allows-suit-alleging-exxonmobils-everett-tank-farm-hazard-proceed.

Dismiss with respect to alleged injuries that are unlikely to occur until after the Permit has expired or, if the Permit remains in effect indefinitely, in the future. In particular, the court ruled that CLF does not have standing for injuries that allegedly will result from rises in sea level, or increases in the severity and frequency of storms and flooding, that will occur in the far future, such as in 2050 or 2100.

To date, ExxonMobil's legal duty to address immediate and imminent threats to the communities and waters surrounding the terminal from current and prospective conditions caused by climate change remains at the center of the case.

PART II:

Liability Of Contractors, Developers, Realtors, And Insurance Agents[43]

In brief: *Generally, contractors may be subject to liability for negligence claims (similar to those discussed above) as well as breach of contract claims arising from specific requirements set forth in the contract (e.g., building will be built to withstand wind speeds of a certain rate). The primary vulnerability for liability of developers, realtors, and insurance agents arises from either misrepresentation or failure to disclose relevant details about the property. These actors all have a duty to disclose known risks to property from climate change. Knowledge of the risk can be either express (e.g., through a disclosure on a listing forms) or implied (due to ready access to relevant information that developer/realtor/agent should have known about).*

I. CONTRACTORS

A. Negligence

Contractors, like other professionals, have a legal duty to act reasonably to avoid causing harm to other members of society. In the context of climate change, contractors may find themselves legally vulnerable to negligence claims when their conduct does not adequately account for increasingly disruptive weather events. A contractor may be expected to anticipate even severe storms, and could be vulnerable to negligence actions caused by a lack of sufficient preparation.[44] A powerful natural force, or "act of God" only shields a contractor's liability for damages "when the force is of such magnitude that the damage *cannot be reasonably anticipated*, or when *reasonable preventive measures* are insufficient to avoid the damage."[45]

Even a government-employed contractor may still be subject to negligence actions unless the government approves the precise specifications for a project.[46] Thus, whether operating primarily in the private or public sector, contractors should take measures to anticipate more extreme weather events like flooding, hurricanes, sea level rise, and heat waves.

B. Breach of Contract

Contractors should also be cognizant of potential liability for breach of contract claims arising from known or anticipated climate change. The express language of the contract will largely control whether a contractor has adequately performed her duties to the client. For example, where a contract specifically states that a building should be watertight, the contractor may be liable for failure to satisfy this provision—even absent negligence or lack of due care.[47]

[43] Boston College Law student Peter Mandych ('19) contributed to the research and analysis in this section.

[44] *See L. G. Balfour Co. v. Ablondi & Boynton Corp.*, 338 N.E.2d 841, 844 (Mass. App. Ct. 1975) (contractor found negligent for leaving debris and fill in a riverbed that caused the water level to rise, resulting in flood damage after major rainstorm).

[45] *Id*. (emphasis added).

[46] *See In re Katrina Canal Breaches Litig.*, 620 F.3d 455, 464 (5th Cir. 2010) (contractor's alleged negligent conduct that resulted in severe flooding during Hurricane Katrina was not shielded by government-contractor immunity).

[47] *See Early v. O'Brien, 64 N.Y.S. 848 (App. Div. 1900).*

If a contract fails to explicitly state that a contractor is *not* liable for damage caused by flooding, storms, and other extreme weather events, then courts may find that there is an *implied* duty to address these risks.[48] In other words, "[W]here a party has agreed, without qualification, to perform an act which is not in its nature impossible of performance, he is not excused by the difficulty of performance, or by the fact that he himself becomes unable to perform."[49] Thus, when entering a contract for a project potentially vulnerable to climate change impacts, contractors should consider both explicit and implicit contract terms.

II. DEVELOPERS/SELLERS

A. Intentional Misrepresentation

Though developers and other land sellers are generally not required to investigate natural hazards before sale, they may neither lie about material facts nor intentionally mislead a purchaser (especially if the purchaser relies upon such information).[50] Significantly, the old common law doctrine of *caveat emptor* ("let the buyer beware") does not apply in cases of intentional misrepresentation. Thus, developers who mislead buyers concerning known or readily ascertainable hazards from climate risk (e.g., known flooding problems) may be vulnerable to later claims of misrepresentation.

B. Withholding Information

Sellers also have a duty to disclose natural hazard information that could affect the value of a property, even when the sale agreement contains an "as is" clause.[51] Certain states, such as California, expressly require a seller to disclose whether property is located in a designated natural hazard area (including wildfire and flood areas).[52] Massachusetts, in contrast, shifts more of the risk to the buyer, requiring only that the seller disclose whether a home contains lead paint or a septic system.[53] The question of what constitutes a natural hazard area will likely change as the climate changes, and developers should be aware of the relevant state law. For instance, Massachusetts is currently undergoing a state climate adaptation planning process and intends to integrate the climate adaptation plan with the state's natural hazard mitigation plan. The climate elements of the final resulting plan, which will include projection data on impacts like sea level rise, extreme precipitation, and storm surge, could have an impact on the definition of a natural hazard area.

1. Implied Warranties

The warranty of habitability—ensuring that a living space is in fact fit for human habitation—exists even in the absence of an express agreement between the developer and future owner. That is, in reviewing contract disputes, courts often *infer* this warranty into the

[48] *See Caron v. Andrew*, 284 P.2d 544, 547 (Cal. Dist. Ct. App. 1955) (contractor's failure to complete leveling by date specified in contract not excused by unseasonal flood); *F. J. Busse, Inc. v. Dep't of Gen. Servs.*, 408 A.2d 578, 581 (Pa. Commw. Ct. 1979) (flood damage caused by an act of God rendering project more expensive did not relieve contractor of liability for such risk); *Pete Smith Co. v. City of El Dorado*, 529 S.W.2d 147, 149 (Ark. 1975) (contractor liable for completion of golf course despite torrential rain causing over $60,000 in damage).

[49] *Caron*, 284 P.2d at 547.

[50] *See, e.g., Wassall v. Payne*, 682 So. 2d 678 (Fla. Dist. Ct. App. 1996) (allowing case fraudulent misrepresentation claim to move forward where home buyer allegedly relied upon seller's assurance that flooding had not been an issue and subsequently suffered economic damage from periodic flooding).

[51] *See Haney v. Castle Meadows, Inc.*, 839 F. Supp. 753, 757 (D. Colo. 1993) (seller that intentionally concealed that property was partially located within floodplain could not "hide behind contract language purporting to shift the risk of nondisclosure to the purchaser").

[52] CAL. CIVIL CODE § 1103 (West 2017).

[53] MASS GEN. LAWS ch. 111, § 197A (2017); 310 MASS. CODE REGS. 15.301 (2017).

contract.[54] When selecting a building site, developers should also take into account any changes to the landscape that could occur due to climate change.[55] For example, if the project is in an area where maps have been developed using climate projection data to identify anticipated flood vulnerabilities, the developer should check to see whether or not the site will be impacted.

Moreover, a successful suit alleging a breach of the implied warranty of habitability does not require that the dwelling be rendered totally uninhabitable. Rather, breach of the warranty is established by proof of a defect of a nature which "substantially impairs the enjoyment of the residence."[56] Developers should thus be aware that many jurisdictions (including Massachusetts) recognize implied warranties, even without express contractual terms.[57] Climate risks that cast doubt on whether a particular dwelling or its location are suitable for habitation (e.g., mold growth due to frequent flooding) could give rise to claims that such implied warranties have been breached.

III. REALTORS

A. Failure to Disclose Defects

Realtors may also find themselves legally responsible for losses that occur as a result of extreme weather events. Since realtors are professionals, ". . . it is their job to know their profession. People rely on and trust them. Failure to comply with either the accepted standards in the field or the standards society is willing to recognize as acceptable, is actionable."[58] In Massachusetts, ". . . a [realtor] who discloses partial information that may be misleading has a duty to reveal all the material facts he knows to avoid deceiving the other party."[59] Thus, in the face of increasing structural stresses occasioned by extreme weather events, realtors have a particularly important obligation to disclose defects to prospective buyers.

B. Negligent Misrepresentation

Where a realtor knows or should have known about property defects, and fails to disclose them, buyers who later suffer losses may pursue a negligent misrepresentation claim. In one Massachusetts case, a prospective buyer expressly asked whether the cellar was dry and the realtor affirmatively assured the buyer it was.[60] However, the seller of the property had indicated 'water seepage in the cellar' on materials submitted to the realtor for listing the property, so the court found the realtor should have known of the defect and therefore upheld the negligent misrepresentation claim.[61] In the climate change context, if a realtor knows or should know that a particular property is highly susceptible to damage from sea level rise (e.g., from an express disclosure from the seller or ready access to floodplain maps), then the realtor has an obligation to disclose that risk to any potential buyer.

Even when a buyer conducts an independent investigation of a property, a realtor may still be subject to legal liability for a defective home. Furthermore, in

[54] *See, e.g., Shisler v. Frank*, 582 N.W.2d 504 (Wis. Ct. App. 1998) (Nos. 97-2310 to 97-2312) (finding seller-contractor liable based on "implied warranty of fitness for intended use" after defective basements led to flooding and property damage); *Albrecht v. Clifford*, 767 N.E.2d 42, 47 (Mass. 2002) ([A] building that ". . . fails to keep out the elements because of defects of construction, would breach the implied warranty . . . .").

[55] *See ABC Builders, Inc. v. Phillips*, 632 P.2d 925, 935 (Wyo. 1981) (after house at base of hill destroyed by mudslide, court found developer liable for breach of implied warranty to build in suitable location).

[56] *Rogers v. Lewton*, 570 N.E.2d 133, 135 (Ind. Ct. App. 1991).

[57] *See id*.

[58] *Hulse v. BHJ, Inc.*, 71 P.3d 262, 266 (Wyo. 2003).

[59] *V.S.H. Realty, Inc. v. Texaco, Inc.*, 757 F.2d 411, 414 (1st Cir. 1985).

[60] *Maxwell v. Ratcliffe*, 254 N.E.2d 250, 252 (Mass. 1969) (especially when prospective buyers expressly raised question of water in basement, realtors had obligation to disclose relevant known facts).

[61] *Id*.

some instances it may be unreasonable for a realtor to rely on information provided by a seller, in which case the realtor has an independent duty to investigate further.

C. Breach of Fiduciary Responsibility

Some courts have determined that realtors have a fiduciary responsibility to their client, imposing additional legal obligations on the realtor.[63] Even when a court does not characterize a realtor's responsibility to their client as fiduciary, the court may still hold the realtor to a high standard, especially in the context of natural hazards.[64] Thus, whether or not a realtor has an express "fiduciary" responsibility to a client, a realtor may have an obligation to ensure that clients are fully informed. This obligation may include on obligation to apprise clients of readily available information about climate change and its impact on a region's geography and weather patterns; for example, the availability of a climate action plan or projection data for the area that documents the potential impacts.

IV. INSURANCE AGENTS

A. Misrepresentation

Finally, insurance agents, though in a different professional role than developers or contractors, should nevertheless be cognizant of the legal liabilities that may increase as a result of climate change. In particular, insurance agents may be legally required to provide accurate flood insurance information to avoid suits in misrepresentation.[65] Especially as flooding becomes more common and more severe throughout much of the US, insurance agents must take care to accurately present risks and costs to their clients. Reliance on past delineation of floodways, floodplains, or other historical, rather than current or projected data, may give rise to liability.

[62] *See Gennari v. Weichert Co. Realtors*, 691 A.2d 350, 366 (N.J. 1997) (realtor and builder liable under New Jersey Consumer Fraud Act for multiple defects in residential development, including flooding).

[63] *See Hughes v. Goodreau*, 2001-2107 (La. App. 1 Cir. 12/31/02); 836 So. 2d 649, 660 (real estate broker liable for failure to disclose material defect to sellers that resulted in home flooding during heavy rain).

[64] *See Robbins v. Marchant*, 616 S.W.2d 736, 736–37 (Ark. Ct. App. 1981) (upholding judgment against insurance broker and seller for failure to inform buyers that house was located in flood zone and that buyers should therefore purchase flood insurance).

[65] *See Carpenter v. Scherer-Mountain Ins. Agency*, 733 N.E.2d 1196, 1205 (Ohio Ct. App. 1999) (insurance broker could be liable for misrepresentation where broker severely under-quoted premium for flood insurance policy, inducing buyers to proceed with loan and property closing); *Morgan v. Tackitt Ins. Agency, Inc.*, 852 N.E.2d 994, 999 (Ind. Ct. App. 2006) (insurance broker liable for failure to inform homeowner that desired insurance could not be obtained); *Pedersen v. Hart Ins. Agency, Inc.*, No. CIV. 10-10922-NMG, 2011 WL 4970920, at *4 (D. Mass. Oct. 18, 2011) (question of whether insurance agent made negligent misrepresentation in describing reasons for high flood insurance premiums allowed to go to jury).

PART III:

Liability of Governments/ Government Officials

States and municipalities could face claims for failing either (i) to consider or adapt to climate change in their actions or (ii) to integrate climate change adaptation into their actions. In the latter instance, decision-makers could face legal challenges both for not doing enough to address adaptation, and for acting in a manner that results in more stringent regulation. These claims could be brought against both state and municipal governments, although local governments may be particularly vulnerable given the number of decisions they make that could influence impacts such as flooding and erosion.[66]

Towns and cities[67] may voluntarily pursue adaptation measures through their general police powers.[68] However, statutory frameworks can compel municipalities to pursue adaptation measures. For example, a town could face liability when they do act or undertake responsibility for a given function (such as managing stormwater or wastewater) if they fail to take into account foreseeable injury to people or property due to climate change impacts.

Generally speaking, these are not new theories of liability or constraints on action; their application to climate change adaptation is an outgrowth of existing laws and precedent. At times this evolution of claims may be hard to trace: cases about municipal inaction or action regarding flooding, for example, may not be presented as climate change or adaptation litigation per se, but may nonetheless implicate adaptation concerns. Thus, although climate change-related litigation is relatively new, particularly as it relates to municipal responsibility for actions to adapt to the impacts of climate change, existing cases are informative as to how courts might decide future claims. While climate-related litigation is still rare in Massachusetts, it is possible and, in certain circumstances, precedent supports plaintiffs who have suffered property injuries as a result of municipal inaction.

This section of the Report reviews several potential sources of liability for municipal inaction or action on climate change adaptation. Like the other legal sections of this Report, this is not an exhaustive presentation on risks or a comprehensive review of precedents, but instead an introduction to key topics.

I. COMMON LAW TORTS

In brief: *Three types of tort claims are addressed here: negligence, nuisance, and trespass. An injured party bringing a claim for damages under one of these three theories of tort law must prove the same elements as discussed above under Part I: Liability for Design Professionals. The main difference in bringing one of these claims against a government, however, is that it may be barred by the government's so-called "sovereign immunity." But Federal and state governments have set forth specific tort claims that are permissible to bring, which are detailed in the relevant Tort Claims Act. Before turning to the details of each type of tort claim, we examine the concept of sovereign immunity and when a government can be sued for a tort.*

[66] See e.g., Jon Kusler, "Government Liability and Climate Change: Selected Issues for Wetlands and Floodplain Managers," iv (2016) [hereinafter, "Kusler"]

[67] This Report refers to towns and cities interchangeably.

[68] See Barbier v. Connolly, 113 U.S. 27, 31, 5 S.Ct. 357, 28 L.Ed. 923 (1885) (observing that a state's police power permits it to enact laws promoting "the health, peace, morals, education, and good order of the people"); United States v. Salerno, 481 U.S. 739, 747, 107 S.Ct. 2095, (1987) ("There is no doubt that preventing danger to the community is a legitimate regulatory goal.").

A. Sovereign Immunity[69]

Sovereign immunity refers to a legal doctrine in which the sovereign (such as the state or federal government) cannot be sued without its consent. The principle of sovereign immunity in U.S. law was inherited from the English common law maxim *rex non potest peccare*, meaning "the King can do no wrong." However, different governments have waived their immunity (i.e., allowed lawsuits) to differing degrees so that in certain circumstances suits may be brought.

The federal government has waived its sovereign immunity primarily through the Federal Tort Claims Act ("FTCA"), which generally allows suit if a tortious act of a federal employee causes damage. Many states have statutes similar to the FTCA. For purposes of this legal overview, the focus is on the Massachusetts "Torts Claims Act."[70] However, given the similarities among state tort claims acts, the discussion below could shed light on litigation potential in other states as well.

The Torts Claims Act waives sovereign immunity when any public employee[71] acting within the scope of his employment wrongfully or negligently causes injury or loss of property, personal injury, or death. Such injury can be caused by either affirmative acts or omissions.[72] A public employer is broadly defined[73] and includes boards, commissions, and various other municipal authorities and public entities.[74] Any employee acting within the scope of his or her employment can create liability for the public employer, but employees are not personally liable for negligent torts.[75, 76] Whether a person working for a public employer is an employee or independent contractor is a question of fact that is relevant because only employees can create liability for municipalities.[77]

From a procedural perspective, tort claims against the state or municipalities are subject to a presentment provision, which requires that (i) injured parties present their claims to the public employer within two years from the date that the cause of action accrued; and (ii) that the claim be denied before plaintiffs bring a judicial suit.[78] There is also a three year statute-of-limitations

[69] Harvard Law School student Camila Connolly ('18) contributed to the research and analysis in this section.

[70] Mass. Gen. Laws ch. 258.

[71] The Torts Claims Act defines a public employee, in part, as "elected or appointed, officers or employees of any public employer, whether serving full or part–time, temporary or permanent, compensated or uncompensated, and officers or soldiers of the military forces of the commonwealth." Mass. Gen. Laws ch. 158 § 2. It should be noted that the remedies provided by the Torts Claim Act are "exclusive of any other civil action or proceeding by reason of the same subject matter against the public employer or, the public employee or his estate whose negligent or wrongful act or omission gave rise to such claim." *Id*.

[72] *Id*.

[73] *Id*. ("[T]he commonwealth and any county, city, town, educational collaborative, or district, . . . and any public health district or joint district or regional health district or regional health board established pursuant to [Mass. Gen. Laws ch. 111, §§ 27A-B] and any department, office, commission, committee, council, board, division, bureau, institution, agency or authority thereof including a local water and sewer commission including a municipal gas or electric plant, a municipal lighting plant or cooperative which operates a telecommunications system pursuant to [Mass. Gen. Laws ch. 164], department, board and commission, which exercises direction and control over the public employee, but not a private contractor with any such public employer, the Massachusetts Port Authority, or any other independent body politic and corporate.").

[74] S*ee, e.g., Lopes v. Riendeau*, No. CV 14-10679-NMG, 2016 WL 1290349 (D. Mass. Mar. 30, 2016) (prison healthcare provider a public employer); *Doe v. Town of Blandford*, 402 Mass. 831 (1988) (regional school district a public employer); *Alex v. Boston Water & Sewer Comm'n*, 45 Mass. App. Ct. 914, (1998) (city water and sewer commission a public employer).

[75] This overview does not address the various caveats for intentional torts carved out by the case law because they are not likely to be applicable in the climate change context.

[76] Mass. Gen. Laws ch. 258 §2.

[77] *See Williams v. Hartman*, 413 Mass. 398, 400 (1992) ("'The basic question is whether a person is subject to the direction and control of a public employer.'") (internal citations omitted).

[78] Mass. Gen. Laws ch. 258 § 4.

beginning on the date when the cause of action accrued.[79] Additionally, damages are capped at $100,000 in claims against public employers.[80]

There are ten statutory exceptions to the state's waiver of sovereign immunity, i.e., scenarios in which a state or municipality retains sovereign immunity from liability, and therefore cannot be sued.[81] These exceptions are set forth in Mass. Gen. Laws ch. 258 sections (a) through (j) as follows:

a) when a public employee is exercising due care in the execution of any statute or regulation of the public employer, whether or not the law is valid;

b) any performance or failure to perform a discretionary function, whether or not the discretion is abused;

c) any claim arising from an intentional tort;

d) any claim related to tax collection;

e) any claim based on decisions to issue, suspend, revoke, or deny permits or similar authorizations;

f) claim based on a failure to inspect, or an inadequate inspection, of property to determine whether it is in compliance with the law;

g) any claim based on the establishment of or failure to establish a fire department;

h) any claim based on the failure to establish a police department;

i) any claim related to the release, parole, or furlough of prisoners; and

j) any claim related to a failure to diminish or prevent the tortious conduct of a third party.

Several of these exceptions are, by their nature, more relevant in the climate change context; these are discussed in more detail below.

1. Discretionary Function Exception

Pursuant to Mass. Gen. Laws ch. 258 section 10(b), municipalities retain sovereign immunity for any claim based on the exercise or performance of a discretionary function, whether or not the discretion is abused. Analysis under section 10(b) follows a two-prong test that has been summarized as follows:

First, it must be determined whether the actor had discretion to take or not take the challenged action. If the actor was required to do what she did, the exemption does not apply. Second, if the actor had discretion, it must be determined whether the decision was geared towards policy making and planning or towards the implementation and execution of a previously established policy. The exemption only applies if the decision involved policy making or planning.[82]

There are few bright lines in determining what constitutes a discretionary function, which courts do on a case-by-case basis. The Massachusetts Supreme Judicial Court ("SJC") has stated that the following considerations are "relevant" in determining whether a public employee's act involved discretionary conduct:

> If the injury-producing conduct was an integral part of governmental policymaking or planning, if the imposition of liability might jeopardize the quality of the governmental process, or if the case could not be decided without usurping the power and responsibility of either the legislative or executive branch of government, governmental immunity would probably attach. The general rule, however, should be one of governmental tort liability.[83]

[80] Mass. Gen. Laws ch. 258 § 2.

[81] Mass. Gen. Laws ch. 258 § 10.

[83] Kopelman & Paige. (2014). Municipal Tort Liability General Laws Chapter 258. Retrieved from: http://www.k-plaw.com/pdf/MunicipalTortLiability.pdf; *see also Shapiro v. City of Worcester*, 464 Mass 261, 270 (2013).

Thus, a decision must generally involve new policy-making or planning to qualify as discretionary; "[d]iscretionary acts are not those that involve 'the carrying out of previously established policies or plans.'"[84]

For example, in evaluating nuisance claims against the City of Worcester arising from the discharge of sewage backups from the city's sewer system onto private properties after a severe rainstorm, the SJC agreed with the framing of the issue as "whether the cause of the sewage backup was a failure in planning or a failure in implementing a plan."[85] The city had been warned in a 1996 report that increased use of the sewage system without improvements could cause backups and spillage if there were heavy rains.[86] Subsequent to receiving that report, the city executed an agreement with the Metropolitan District Commission ("MDC") that allowed the commission to use the city's sewer system and required the commission to design and construct sewer improvements by July 1, 2005.[87] These improvements had not been made at the time of two of the sewage backups that damaged the plaintiffs' property.[88] A report conducted after the backups concluded that the overflows were due to heavy rain and were consistent with the predictions in the 1996 report.[89] In this context, the SJC concluded that the decision not to update the sewer system was not discretionary, finding instead that:

> All of the events beginning with the [1996] study through the decision to upgrade the system are properly characterized as 'planning and policy-making.' However, the moment the city entered into a contractual arrangement . . . for constructing the necessary improvements by a date certain, the city was charged not with planning or policymaking, but with ensuring the proper implementation by the MDC of its chosen course of action.[90]

Thus, the city was not immune from suit under the discretionary function exemption.

Other instances in which courts have similarly found that the discretionary function exemption to liability did not apply include the following:

- Failing to maintain a municipal parking lot;"[91]
- Failing to prune a tree branch overhanging a public road; [92]

[84] *Patrazza v. Commonwealth*, 398 Mass. 464, 467 (1986) (internal citation omitted) (emphasis added); see also Brum v. Town of Dartmouth, 428 Mass. 684, 690 (1999) ("Discretionary function immunity does not apply in cases in which a government official's actions were mandated").

[85] *Shapiro v. City of Worcester*, 464 Mass. 261, 270 (2013).

[86] *Id*. at 263-264.

[87] *Id*. at 264.

[88] *Id*.

[89] *Id*.

[90] *Id*. at 271.

[91] *Doherty v. Belmont*, 396 Mass. 272, 276 (1985) ("[T]he relevant inquiry [in this case] is not whether the decision to remove the parking meters constituted a discretionary function under § 10(b), but rather whether the maintenance of the parking lot in furtherance of this decision falls within the exemption from liability. Any negligence in performing, or failing to perform, the ministerial task of maintenance does not rise to the level of 'public policy or planning' decisions warranting protection under G. L. c. 258, § 10(b).").

[92] 27 Mass. App. Ct. 410, 412 (1989) ("The day to day care and maintenance of a public road seems at the opposite end from policy and planning . . . . and municipal negligence in such a respect is not sheltered as a discretionary function . . . . This, we think, is where the alleged failure to prune the overhanging branch properly fits.").

- Failing to maintain a corrugated pipe, which allegedly caused a sinkhole to develop on plaintiff's property;[93] and
- Failing to warn of dangers on a walkway under football bleachers, and failing to prevent access to the walkway.[94]

These types of examples are often difficult to distinguish from those fact patterns in which the discretionary function exemption has been applied to preclude municipal liability, such as the following:

- Removing natural accumulations of snow and ice from park bicycle paths was a discretionary activity for the Massachusetts Department of Conservation and Recreation ("DCR"), thus the Department was not liable for injuries suffered by a cyclist riding on the street to avoid snow-covered bicycle path.[95]
- Failing to erect a fence on a public staircase near a playground or to remove the snow from a staircase was a discretionary function because it was based on a determination of how to allocate limited resources, which is an integral part of government planning.[96]

Permitting decisions can also be protected under the discretionary function exception.[97]

2. Permitting Decisions Exception

The state and municipalities are also immune from liability for permitting decisions.[98] This protection is important to highlight here, because the negligent issuance of permits has contributed to climate-related litigation against municipalities in other states.[99]

This exception may insulate municipalities from liability for harm resulting from a decision to address or disregard climate data in a permitting process. In one Massachusetts case, the plaintiffs argued that the state was negligent in denying them permits to construct barriers to protect their coastal properties.[100] When the ocean washed away their homes, the plaintiffs brought suit,

[93] *Spencer Furniture, Inv. v. Town of Spence,* 29 Mass.L.Rptr. 360, *4 (Mass. Super. Ct. 2012) ("The issues raised in the present case, as many of the issues raised in these types of analysis, present an area where there undoubtedly is discretion involved regarding the type of maintenance involved in a Town's obligation to maintain a highway and/or roadway in accordance with its ownership interest. . . .[However], the Town of Spencer, according to the evidence, subjectively did not know that the pipe existed and accordingly, conducted no maintenance and/or inspection on the subject property . . . the defendant in this case was not involved in any type of discretionary decision making, but instead did no maintenance on the subject corrugated steel pipe.").

[94] *Griem v. Town of Walpole*, 21 Mass.L.Rptr. 402, *2 (Mass. Super. Ct. 2006) (finding that the town's decision regarding replacement or renovation of bleachers may have been a discretionary action, but "the record lacks any indication that Walpole decided not to warn or to prevent access as a matter of policy or planning. 'In the absence of evidence that the city made such a decision [not to place warning signs] based on policy, it may not here invoke the exception of § 10(b).'").

[95] *Roy v. Dep't of Conservation & Rec.*, 20 Mass.L.Rptr. 299, *1 (Mass. Super. Ct. 2005) (finding that plaintiff was unable to produce statutory or case law support for the proposition that DCR has an affirmative duty to plow snow on bike paths and that "State agencies have vast discretion in establishing where and how its resources will be allocated through its enabling legislation, and Massachusetts courts have abided by that executive discretion.") (citing *Barnett v. City of Lynn*, 433 Mass. 662, 665-66 (2001) (where the court noted that "a court cannot review 'without usurping the power and responsibility of the . . . executive branch' " issues such as snow removal, available resources and allocation therefore and that Mass. Gen. Laws ch. 258, §10(b) would bar such claims)).

[96] *Barnett v. City of Lynn*, 433 Mass. 662, 664, 745 N.E.2d 344, 346 (2001) ("determination concerning whether to incur the cost of constructing a barrier at the top or bottom of the stairs is an integral part of governmental policymaking or planning.").

[97] *See, e.g., Morrissey v. New England Deaconess Ass'n--Abundant Life Communities, Inc.*, 458 Mass. 580 (2010) (plaintiff did not have a nuisance claim because the decision to issue a permit was protected by the discretionary function exception).

[98] Permitting decisions include "any claim based upon the issuance, denial, suspension or revocation or failure or refusal to issue, deny, suspend or revoke any permit, license, certificate, approval, order or similar authorization." Mass. Gen. Laws ch. 258 § 10(e).

[99] *See, e.g., Harris Cty. Flood Control Dist. v. Adam*, 56 S.W.3d 665 (Tex. App. 2001) (leaving open the possibility that a government entity could be liable for approving a highway project that contributed to flooding).

[100] *See Wilson v. Commonwealth*, 31 Mass. App. Ct. 757, 764, 583 N.E.2d 894, 899, aff'd, 413 Mass. 352, 597 N.E.2d 43 (1992).

alleging that the state had negligently ignored science in its decision.[101] The court held that the permitting decisions exemption of the Massachusetts Torts Claims Act protected the state's refusal to issue the plaintiffs a construction permit.[102]

The court also relied on section 10(e) to reject a tort claim resulting from a Conservation Commission's issuance of permits that resulted in erosion of the plaintiffs' property. In *Woods v. Mass. Dep't of Envtl. Prot.*, the town issued permits to allow construction of coastal revetments that resulted in major erosion to the coastline and damage to private property.[103] Among other claims, the plaintiffs alleged private nuisance under the theory that Massachusetts Department of Environmental Protection ("DEP") and the local conservation commission caused property damage by negligently issuing permits and failing to enforce the conditions of those permits.[104] The court dismissed the nuisance claim under section 10(e) because it was the result of a permitting decision.[105]

3. Inspections Exception

States or municipalities are not liable for failing to inspect or inadequately inspecting property to make sure that it is in compliance with the law.[106] But this does not apply to a municipality's *negligent management* of public property, even if that management includes inspections. In a 2005 case, the court held that section 10(f) only applies to the inspection of third party properties, not public property.[107] Therefore, section 10(f) will not shield a municipality from a claim that alleges a failure to properly inspect and maintain its own property. So for instance, if the Commonwealth was responsible for maintaining dams and failed to inspect them, and flooding and harm ensued, that failure to inspect public property could give rise to a claim for damages.

4. Failure to Act, Diminish, or Prevent Harm Exception

Section 10(j) of the Torts Claims Act provides municipalities with immunity from claims resulting from the tortious conduct of a third party. In other words, public employers, such as state and municipal governments, are generally only liable for harm resulting from conditions or situations that they originally caused.

For example, section 10(j) did not preclude a claim against the Commonwealth by a civilly committed patient in a state hospital who was injured when assaulted by a criminal inmate working in the hospital. While the court reiterated that a mere failure to act could not give rise to liability by the Commonwealth, the court found that the affirmative decision to allow convicted inmates to work in the hospital (i) materially contributed to creating the specific condition or situation that resulted in the harm to the patient, and (ii) was not so remote from the injury that it could be considered not to have been an original cause.[108] This is an

[101] *Id*.

[102] *Id*. *See also Kuhn v. Kaufman*, No. 00285, 2001 WL 755848, at *7 (Mass. Super. Jan. 12, 2001) (board members not liable for decision to deny a sewage variance to plaintiffs due to expanding wetlands); *Mello Constr. v. Div. of Capital Asset Mgmt.*, 84 Mass. App. Ct. 625, 629 (2013) ("[The] Commonwealth has not waived sovereign immunity with respect to any claims arising from the denial of, or refusal to, issue a license or certificate").

[103] No. BACV200700099A, 2011 WL 7788022, at *1 (Mass. Super. Jan. 7, 2011).

[104] *Id*.

[105] *Id*.

[106] Mass. Gen. Laws ch. 258 § 10(f).

[107] *See Twomey v. Commonwealth*, 444 Mass. 58, 63-64 (2005) (town had obligation to inspect visibility of stop signs and was not exempt under §10(f)).

[108] *Devlin v. Commonwealth*, 83 Mass. App. Ct. 530, 535 (2013).

important detail, since climate change related cases can sometimes involve several links in the chain of causation.

Even if Section 10(j) would normally apply to protect public employers from liability, several types of claims can still proceed, including:[109]

- Claims for injuries resulting in part from reliance on a public employer's (e.g., municipality's) "explicit and specific assurance of safety or assistance, beyond general representations that investigation or assistance will be or has been undertaken, made to the direct victim or a member of his family or household."[110] Such assurances cannot be merely implied from conduct or a situation; rather, they must be explicit and in terms that are "definite, fixed, and free from ambiguity."[111] Assurance can be either spoken or written.[112] Permits, certificates, or reports of findings of investigation or inspections do not constitute assurances of safety or assurance.[113] So for instance, if a coastal municipality publishes a report with findings showing which properties are most vulnerable to sea level rise, this would not constitute an "assurance of safety" to those houses deemed "not vulnerable" in the report.

- Claims based on negligent maintenance of public property.[114] Cases against local and state governments have alleged negligent maintenance on public property such as stop signs, ponds, and sewage and stormwater systems.[115] For example, a negligence claim was allowed against the Commonwealth by the estate of a passenger who died in a car accident when the driver failed to stop at a stop sign that was covered by foliage.[116] In a climate change context, this might present as a case against the state government for failing to adequately maintain a sea wall if that failure resulted in harm.

In some instances, the ability to pursue a negligent maintenance case against a municipality or the Commonwealth will depend on whether the action that the government allegedly failed to take qualifies as "maintenance" or a discretionary function (discussed above). For example, in one case, the court concluded that the town could not be sued for negligence regarding failure to dredge a pond that was causing flooding because that level of work went beyond maintenance and instead implicated discretionary policymaking.[116] As we see more governments attempting to engineer solutions to rising sea levels and increased precipitation, this question of whether maintaining those structures is a duty subject to liability, or a discretionary function, will come into greater focus.

As the following cases illustrate, Section 10(j) may protect governments from claims in scenarios where damage is related to significant weather events; however, municipalities could still be liable if they created a condition that enables the injury to occur.

- In *Shapiro v. City of Worcester*, the city knowingly permitted more parties to connect to the sewage

[109] Other types of claims that can be brought against public employers are those that (i) claim that the intervention of a public employee caused injury or placed injured parties in a worse position than they were before the intervention, or (ii) are brought by or on behalf of patients with respect to negligent medical or therapeutic treatment from a public employee. G.L. ch. 258, §§ 10(j)(2) and (4).

[110] Mass. Gen. Laws ch. 258, § 10(j)(1).

[111] *McCarthy v. Waltham*, 76 Mass. App. Ct. 554, 562 (2010).

[112] *See e.g., Ariel v. Kingston*, 69 Mass. App. Ct. 290, 293 (2007).

[113] Mass. Gen. Laws ch. 258, § 10(j)(1).

[114] Mass. Gen. Laws ch. 258, § 10(j)(3).

[115] *Twomey v. Commonwealth*, 444 Mass. 58, 64 (2005) (noting that the "sign in question was designed, installed and maintained by the Commonwealth," which was liable under Section 10(j)(3) for not maintaining the sign in a safe condition.").

[116] *Tarzia v. Hingham*, 35 Mass. App. Ct. 506, 508-09 (1993).

[117] 464 Mass. 261.

system than the system could support.[117] Even though the sewage overflow at issue was immediately caused by a storm, the city was not immune under section 10(j) because it had overburdened the sewage system in the first place.[118] The same theory could apply to a case where harm resulted from stormwater infrastructure failure where a city had identified the need to upgrade an undersized stormwater system (for instance, as a part of a climate action plan), and yet had continued to grant stormwater permits allowing new discharges into that system.

- A business brought negligence and nuisance claims against the City of Worcester for damages from the flooding of raw sewage onto the plaintiff's premises during Tropical Storm Hanna, which the city described as a "70-year storm" that could not have been anticipated. Although the court granted the city's request for summary judgment because of a lack of expert testimony, the court noted that, "[i]n contrast to decisions about what improvements it makes to its sewer and drain systems, the city does not have immunity for claims based upon negligent maintenance of those systems."[119]

Therefore, if a city creates a vulnerable condition, such as overusing the sewage system or permitting new discharges to an already taxed stormwater system, Section 10(j) does not guarantee immunity even if the weather or some other third party is the immediate cause of the injury. Proving these cases, however, may require significant expert testimony.[120]

B. Negligence

In addition to overcoming any relevant sovereign immunity defense, a person bringing a negligence suit against a government entity is required to prove the same four elements described in Part I and II above (duty, breach, causation, and harm). Like Parts I and II above, the focus here will be on the duty of care owed, since this is where climate change litigation is likely to focus. As with the discussion above on negligence liability of various professionals along the chain of design/build/sale of built infrastructure, courts similarly apply the "reasonableness standard" to determine the correct standard of care to apply in any given situation. That is, the court seeks to discern what a rational government decision-maker would have done under similar circumstances. In conducting this inquiry, courts review a variety of factors, two of which are particularly relevant in the climate change context, and described below.

1. Severity of the Harm

Courts will typically hold government decisionmakers to a higher standard of care if the government is engaged in a hazardous activity where a mistake would have particularly significant consequences. For example, if a city is constructing a large dam that, if breached, would send a fatal tidal wave across the city, then the government engineers designing and operating the facility will be expected to make decisions with a higher degree of care and more caution than they would on a smaller, less-hazardous project like remodeling a public building downtown.

[118] *Id*. at 272 ("the action of the city permitting MDC effluent to flow into the city's sewer system materially contributed to its overloading and exposed homeowners to a known risk").

[119] *Canterbury Auto, Inc. v. Worcester*, 32 Mass. L. Rep. 5 (Super. Ct., 2014) ("'Any negligence in performing, or failing to perform, the ministerial task of maintenance does not rise to the level of 'public policy or planning' decisions warranting protection under G.L. c. 258, §10(b).") (citing *Doherty v. Belmont*, 396 Mass. 271, 276 (1985).

[120] S*ee e.g., Canterbury Auto*, 32 Mass.L.Rptr. at 10 ("Expert testimony is required on any subject 'beyond the common knowledge or understanding of the lay juror.' Therefore, expert testimony is necessary to establish both the applicable standard of care and causation resulting from an alleged defect of any 'complex, technical piece of machinery, whose design and operational requirements are not straight forward.'"); *Gencarelli v. Commonwealth*, 84 Mass. App. Ct. 1107 (2013) (unpublished opinion) (upholding summary judgment in favor of defendant based on the lack of sufficient expert testimony regarding alleged damages from stormwater runoff to wetlands.).

[121] See discussion of foreseeability in Part I above, as the analysis is similar here.

2. Foreseeability of the Harm

As discussed, liability may turn on the extent to which the particular harm was foreseeable, or predictable under the circumstances.[121] In a case before the Colorado Supreme Court, the state Game, Fish, and Parks Commission was held liable for flooding damages resulting from a dam breach where the Commission should have been able to foresee and plan for the rain event that caused the flooding.

Illinois Farmers Insurance Company et al. v. Metropolitan Water Reclamation District of Greater Chicago et al. illustrates this concept.[123] After severe rains struck the Chicago area and caused massive flooding, Farmers filed a series of class action lawsuits against the water reclamation district for greater Chicago and numerous other cities and local governments in Cook County, Illinois on behalf of its policy holders affected by the flooding. Farmers claimed that the government's failure to address capacity issues in the city's stormwater management system resulted in the flooding. The claim alleged that the 2013 severe rainstorm was reasonably foreseeable because the city's 2008 Climate Action Plan identified increased severe rain as an adverse impact of climate change on the city's infrastructure. Farmers argued that the government owed the property owners a duty to prepare for the increased rain by increasing the capacity of the city's stormwater management system. The insurance company ultimately voluntarily dismissed the case, stating only that the case had served the intended purpose of raising awareness around the issue.

Although the case did not proceed to dispositive motions or to trial, and therefore questions about whether Farmers would have been able to overcome sovereign immunity or other defenses remain unanswered, the case did have a few interesting impacts. On the one hand, the litigation risk highlighted by this suit reinforced the need for local governments not only to plan for climate change impacts, but also to follow through with effective implementation, including things like swifter action by municipalities to upgrade stormwater infrastructure.

On the other hand, some argue that this type of litigation may have had the impact of discouraging decision-makers from gathering climate data or doing analysis for fear that it may be wielded in court to demonstrate official awareness of the relevant climate hazard. But this argument falls somewhat flat. While failing to implement a climate adaptation plan could leave governments open to liability, the "reasonableness" and "foreseeability" standards described earlier may trigger this liability *anyway*. A court may still find that officials knew or should have known about foreseeable harms whether or not a government publicly adopts a climate plan that acknowledges shortcomings and future impacts

In a suit similar to the *Farmers* class action case, a group of Ontario homeowners sued the provincial natural resource agency for failure to respond to increasing flood risk.[124] Ontario's Ministry of Natural Resources manages the water levels in several lakes whose surfaces would otherwise rise higher and fall lower with snow melt and precipitation. Historically, the area around the lakes has not seen flooding, but, since 2010, three different floods have damaged and destroyed private property there. In September 2016, property owners filed a class action suit seeking 900 million Canadian dollars in damages from the Ministry for the most recent flood events. The plaintiffs alleged that the Ministry had a duty to avert foreseeable flooding, knew that the lakes had reached dangerously high levels early in 2016, yet negligently allowed the lakes to flood, which in turn destroyed adjacent structures. This case is still pending as of the publication of this Report.

[122] *Barr v. Game, Fish, and Parks*, 497 P.2d 340, 344 (Col., 1972).

[123] 14-cv-03251 (2014). See Summary of case and legal documents here: http://climatecasechart.com/case/united-states-v-metropolitan-water-reclamation-district-of-greater-chicago/.

[124] *Burgess v. Ontario Ministry of Natural Resources and Forestry* (2016). See summary of case and legal documents here: http://climatecasechart.com/non-us-case/burgess-v-ontario-minister-of-natural-resources-and-forestry/.

C. Nuisance

Nuisance claims have been at the heart of many legal challenges regarding climate change, typically alleging that emissions, often by private companies, cause a public nuisance by contributing to the impacts of climate change, such as flooding. To-date, common law nuisance claims at the federal level have not been successful, in part because the federal Clean Air Act has been construed to preempt federal common law tort claims arising from air pollution within the United States Environmental Protection Agency's (EPA) authority to regulate.[125] Whether that holding precludes claims related to conduct outside of EPA's regulatory ambit has not been tested.

Instead, plaintiffs are seeking similar relief under state nuisance law. In the aftermath of Hurricane Harvey, a group of homeowners brought suit against the City of Houston and the Harris County Flood Control District for injuries resulting from defendants collective decision to release a higher than normal amount of water from local dams.[126]

In Massachusetts, there is a clear distinction between public and private nuisance claims.[127] "A nuisance is public when it interferes with the exercise of a public right by directly encroaching on public property or by causing a common injury."[128] Private nuisances, on the other hand, involve intrusions on a private enjoyment of property. To illustrate the distinction, a federal district court in Massachusetts explained that, while pollution of groundwater may create a private nuisance if polluted water comes into direct contact with and harms the owner of private property, exposure to contaminated water from town wells would impact the general public and be the basis of a public nuisance claim.[129]

1. Public Nuisance

A public nuisance claim can be based on conduct that is intentional, and unreasonable or negligent, reckless or ultrahazardous.[130] "In determining whether there has been an unreasonable interference with a public right, a court may consider, '[w]hether the conduct involves a significant interference with the public health, the public safety, the public peace, the public comfort or the public convenience . . . .'"[131]

Public nuisance claims are generally brought by the Attorney General; private plaintiffs, e.g. individuals, can bring a public nuisance claim only if they "show that the public nuisance has caused some special injury of a direct and substantial character" that is different than the injury suffered by the general public.[132] For example, a federal district court in Massachusetts concluded that, where pollution contamination interfered with public health and the environment, a plaintiff's inability to sell property constituted a special injury that allowed the plaintiff to bring a public nuisance claim.[133]

[125] *See American Elec. Power Co. v. CT*, 549 U.S. 497 (2011) (unanimous holding that the Federal Clean Air Act, 42 U.S.C. §§ 4201 et seq., displaces common law remedies for abatement of carbon dioxide emissions); see also e.g., Center for Climate and Energy Solutions, "Common Law Nuisance and Tort Claims" (summarizing key cases), *available at* https://www.c2es.org/federal/courts/common-law-nuisance-tort-claims.

[126] *Aldred et al., v. City of Houston and Harris County Flood Control District*, Plaintiffs Original Petition, available at: https://www.courthousenews.com/wp-content/uploads/2017/09/HoustonDams.pdf.

[127] *See e.g., Lewis v. General Elec.*, 37 F.Supp.2d 55, 60 (D. Mass. 1999) (noting that public and private nuisances have almost nothing in common).

[128] *Connerty v. Metropolitan Dist. Comm'n*, 398 Mass. 140, 148 (1986).

[129] *Anderson v. W.R. Grace & Co.*, 628 F.Supp. 1219, 1232 (D. Mass. 1986).

[130] *Id*.

[131] *Sullivan v. Chief Justice for Admin. & Mgmt. of Trial Court*, 448 Mass. 15, 34 (2006).

[132] *Id*. at 34-35.

[133] *Lewis v. General Elec. Co.*, 37 F.Supp.2d 55, 61 (D. Mass. 1999).

There may be an open question as to whether a public nuisance claim can be brought against a public entity, e.g., the Commonwealth or a municipality. In a 1986 case, the Massachusetts Supreme Judicial Court observed that there had been no case in Massachusetts allowing recovery for a public nuisance against a public entity.[134] However, at that point in time, public nuisance claims were reviewed as equitable—as opposed to legal—claims; it was not until a 2010 decision by the SJC that nuisance claims were determined to be subject to the Massachusetts Tort Claims Act.[135] But that 2010 case, *Morrissey v. New England Deaconess Ass'n.*, addressed private nuisance claims; it did not make any reference to public nuisance claims.

2. Private Nuisance

A private nuisance exists when a property owner creates, permits, or maintains a condition or activity on his or her property that causes a substantial and unreasonable interference with the use and enjoyment of the property of another.[136] A municipality can be liable for a private nuisance in its capacity as the owner of land or property in the same way that a person could be liable.[137] Unauthorized discharges of water onto property are a frequent subject of private nuisance claims. In regions like New England, which is already experiencing a more than seventy percent increase in extreme precipitation events due to climate change, we can likely expect a concomitant increase in both private and public nuisance suits related to impacts from water discharges is likely.

Plaintiffs must prove that a defendant's conduct was intentional or unreasonable; determining what constitutes reasonable versus unreasonable behavior may require input from experts for technical issues such as the design of stormwater maintenance systems.[138]

Courts will also balance the reasonableness of a defendant's action with the magnitude of the impact on another party's private property.[139] The outcome of such a reasonableness analysis can impact whether successful plaintiffs receive damages and/or injunctive relief.

In 2010, the SJC held that the Massachusetts Tort Claims Act applies to private nuisance claims against public employers, such as the commonwealth and municipalities. This means that the exceptions to the waiver of immunity discussed above apply. Thus, a claim for a private nuisance will be barred in Massachusetts if the action in question was part of a permitting decision, discretionary function, or other exempted activity. For example, in *Jordan v. City of Cambridge*, the court found that a private nuisance claim against the city alleging failure to maintain city trees, such that the roots interfered with sewer lines and resulted in flooding that damaged plaintiff's property, was barred by the Tort Claims Act because care of the trees was a discretionary function.[140]

D. Trespass

Generally speaking, a trespasser is a person who enters or remains on land to which someone else has a right of possession without permission to do so. To sue for trespass, however, the "illegal entry" does not have to be an actual physical entry by a person onto someone else's land; it is sufficient if the impacts of the trespasser's actions "enter" the property without authorization. For example, municipalities have been sued for flooding on private property from alleged failures in off-site stormwater management facilities—the very types of claims likely to proliferate as climate risk increases.

[134] *Connerty*, 398 Mass. at 150.

[135] *Morrissey v. New England Deaconess Ass'n. – Abundant Life Comm., Inc.*, 458 Mass. 580 (2010).

[136] *See e.g., Morrissey*, 458 Mass. at 588.

[137] *See e.g., Kurtigan v. Worcester*, 348 Mass. 284, 288 (1965).

[138] *See e.g., Canterbury Auto., Inc. v. Worcester*, 32 Mass.L.Rptr. 5, 15 (Super. Ct. 2014).

[139] *See, e.g., DeSanctis v. Lynn Water and Sewer Comm'n.*, 423 Mass. 112, 116 (1996) (internal citations omitted).

[140] 85 Mass. App. Ct. 1114 (2014) (unpublished).

In Massachusetts there are two types of trespass claims: (i) intentional trespass; and (ii) negligent trespass. The distinction is significant with respect to the potential liability of governments, as intentional claims are likely to be barred by the Massachusetts Torts Claims Act but negligent trespass claims can proceed.

1. Intentional Trespass

An intentional trespass requires an "affirmative voluntary act upon the part of the wrongdoer."[141] In a case before the SJC, an electric company alleged that its conduit lines and manholes were harmed by a construction company's discharge of grout. The court noted that, although the construction company did not intend to harm the electric company, nor was there negligence, the discharge of the grout was itself intentional, which was sufficient for moving forward with the claim.[142]

The Massachusetts Tort Claims Act provides immunity to public employers for claims arising out of intentional torts.[143] Although this provision of the Act provides examples of intentional torts that do not include trespass, courts have read the list as non-exhaustive and dismissed intentional tort claims against governments as barred by section 10(c).[144] Both cases note that intentional tort claims may be brought against public employees if they are sued in their individual capacities, as opposed to in their official capacities.

2. Negligent Trespass

Unlike intentional trespass, courts have found that, assuming individuals are acting in the scope of their employment, the Massachusetts Torts Claims Act does not bar negligent trespass claims against public employers such as the Commonwealth and municipalities.[145]

To succeed on a negligent trespass claim, plaintiffs must demonstrate that (i) the defendant was negligent, and (ii) the negligent entry onto plaintiff's land caused the plaintiff's harm.[146] Without directly ruling on the issue, the SJC has noted, in dicta, that negligent trespass claims do not require a showing of intentionality.[147]

The concept of negligence is discussed in Section III.B above, but its relationship to trespass is illustrated in *Fantasia v. Worcester*, where a superior court stated that "[a] claim for continuing negligent trespass can survive based upon the city's alleged negligence in maintaining the sewer system."[148]

The need to demonstrate harm is illustrated in *Espahbodi v. Sudbury*, where plaintiffs sought damages, including under a theory of negligent trespass, based on allegations that the town did not maintain a drainage easement on its property.[149] In noting that a "causal connection between the negligence on the part of the town and injury to the plaintiffs must be shown," the court concluded that, even though plaintiffs may have

[141] *United Elec. Light Co. v. Deliso Const. Co.*, 52 N.E.2d 553, 556 (1943).

[142] *Id*. at 557 (finding that the "affirmative voluntary act" required is not an act intended to harm another's property, but an act intended to 'set in motion a force which in the usual course of events will damage the land of another.'").

[143] Mass. Gen. Laws ch. 258, § 10(c).

[144] *See e.g., Martini v. City of Pittsfield*, 2015 U.S. Dist. LEXIS 42190, *35 (D. Mass. 2015) (alleging damages to property caused by erosion from a lake owned and controlled by the City); *Koltin v. City of Fall River*, 2015 U.S. Dist. LEXIS 132981, *27-29 (D. Mass. Sept. 1, 2015), *adopted in part by Koltin v. City of Fall River*, 2015 U.S. Dist. LEXIS 133513 (D. Mass. Sept. 30, 2015) ("the word 'including' [in Mass. Gen. Laws ch. 258, §10(c)] indicates that the list is not all inclusive and that any intentional tort is protected by section 10(c).").

[145] *See e.g., Robbins v. City of Worcester*, 2010 Mass. Super. LEXIS 297, 7-8 (Mass. Super. 2010) (finding that the city could be liable for negligent trespass due to sewage that spilled onto plaintiff's property because the city failed to properly implement the sewage plan).

[146] *See e.g., DeSanctis v. Lynn Water & Sewer Comm'n*, 423 Mass. 112, 118 (1996).

[147] *Shapiro v. City of Worcester*, 464 Mass. 261, fn 4 (2013).

[148] 2011 Mass. Super. LEXIS 385, *7 (Mass. Super. 2011), aff'd sub nom., *Gremo v. Worcester*, 81 Mass. App. Ct. 1112 (2012).

[149] 1998 Mass. Super. LEXIS 436 (Mass. Super. 1998).

proven that the town negligently failed to maintain the easement, with the result of some spreading of surface water, they had not established that this conduct caused harm for which recovery can be granted.[150] Rather, existing and historic topographic and water flow conditions at the property could have contributed to the plaintiffs' damages. Cases like this suggest that expert testimony may at times be needed to prove causation.[151]

Furthermore, because Massachusetts is a "comparative fault" jurisdiction, plaintiffs' ability to recover damages for a municipality's negligent trespass will be limited if the plaintiffs contributed to the harm.

Finally, as with other forms of tort claims, negligent trespass claims against governments and government officials may be barred by the Massachusetts Torts Claims Act if the action that is characterized as negligent is also a discretionary function for which governments maintain immunity from suit.

II. STATUTORY LAW

In brief: *Mandatory duties in statutory frameworks—such as the duty contained in the Americans with Disabilities Act for a government to provide equal access to emergency response infrastructure—may also be a way that plaintiffs seek government action on climate change and adaptation efforts.*

In some instances, climate change related liability may fall on government entities by virtue of certain statutory requirements. For example, a party may allege that a government's failure to adapt to climate changes violates an explicit statutory duty. The following cases represent examples of several instances where parties cited to statutory obligations to compel government action in the face of climate change. We focus on cases where the action requested was related to adaptation, as opposed to mitigation through greenhouse gas emission reductions. Below are examples of two such cases.[152]

In the case of *Brooklyn Center for Independence of the Disabled (BCID) v. Bloomberg*, a group of 900,000 New York residents with disabilities (including vision, hearing, mobility, and mental disabilities) cited to a mandatory duty in the Americans with Disabilities Act to compel the city to undertake more comprehensive and inclusive adaptation and preparedness measures.[153] The case was filed in September 2011, shortly after Hurricane Sandy struck New York City, and the plaintiffs alleged that the city's emergency response plan had discriminated against people with disabilities.[154] Specifically, plaintiffs alleged that a lack of evacuation routes, wheelchair accessible emergency shelters, and power outages left them stranded in their homes and without vital medical equipment and prescription medications.[155]

On November 7, 2013, the District Court ruled that New York City discriminated against people with disabilities in its failure to plan for their needs in large scale disasters such as Hurricane Sandy.[156] On September 30, 2014, the parties announced a comprehensive settlement agreement to remedy the deficiencies found by

[150] *Id*. at 25-26.

[151] *Id*.

[152] For a more complete list of climate change related cases that draw on both statutory and constitutional duties, visit the Columbia Law School's Sabin Center for Climate Change Law's Climate Change Litigation database: http://climatecasechart.com/us-climate-change-litigation/.

[153] 980 F.Supp.2d 588 (2013).

[154] *BCID v. Bloomberg Complaint*, at 18. Available at: http://dralegal.org/case/brooklyn-center-for-independence-of-the-disabled-bcid-et-al-v-mayor-bloomberg-et-al/#files.

[155] *Id*. at 3.

[156] *BCID v. Bloomberg* Opinion and Order at 116. Available at: http://dralegal.org/case/brooklyn-center-for-independence-of-the-disabled-bcid-et-al-v-mayor-bloomberg-et-al/#files.

the court in its decision.[157] The agreement provides for sweeping improvements to the city's emergency preparedness programs and services, including all major emergency planning areas. These changes will make New York City and its residents more prepared to handle and recover from the impacts of severe weather events associated with climate change.

In the case of *Conservation Law Foundation v. McCarthy*, plaintiff Conservation Law Foundation ("CLF") alleged that Clean Water Act provisions required the Environmental Protection Agency to thoroughly consider how climate change would impact water quality, and how management plans should to address those impacts.[158] Specifically, CLF's complaint alleged that an outdated local water quality management plan that failed to consider climate change, sea level rise, and storm surge could not be used as a basis for federal funding.[159] Although this claim was a classically formulated Clean Water Act claim, CLF's requested remedy included demands that would ultimately improve the adaptive capacity of the region in the face of climate change.

As the above cases illustrate, lawsuits seeking climate adaptation remedies may arise from violations of statutory mandates, as well as from breaches of common law or contract duties discussed earlier.

III. CONSTITUTIONAL LAW

In brief: *Parties have also looked to various constitutional provisions that may either compel or obstruct climate change adaptation actions by governments. This Report focuses on two constitutional concepts that are often cited in climate adaptation cases: (i) the protection of fundamental rights through constitutional tort claims; and (ii) the prohibition of government "taking" of public property without just compensation. In this latter category, taking claims may arise from either government action (e.g., adopting a zoning bylaw that limits coastal development), or inaction (e.g., failure to maintain a flood barrier which overflows and causes damage).*

A. Constitutional Torts

Section 1983 of the Civil Rights Act of 1871 creates a federal cause of action against state and certain municipal officials who deprive private citizens of their constitutional rights,[160] and more narrowly against municipalities where a policy or custom effects such a deprivation.[161] Typically, such constitutional torts involve deprivations of liberty or property interests or fundamental rights in violation of the Constitution's Due Process Clause or Equal protection Clause, where the deprivation occurs "under color of any statute, ordinance, regulation, custom, or usage of any state or territory."[162] The Supreme Court has recognized a similar, narrower cause of action for constitutional deprivations by federal agencies and officials where no other remedy exists.[163]

[157] *BCID v. Bloomberg* Settlement Agreement, available at: http://dralegal.org/case/brooklyn-center-for-independence-of-the-disabled-bcid-et-al-v-mayor-bloomberg-et-al/#files.

[158] First Amended Complaint, *Conservation Law Foundation v. McCarthy*, Case No. 11-cv- 11657 (2012).

[159] *Id*.

[160] 42 U.S.C. § 1983.

[161] *See, e.g. Board of Comm'rs of Bryan Cty v. Brown*, 520 U.S. 397, 403 (1997)(we have required a plaintiff seeking to impose liability on a municipality under § 1983 to identify a municipal "policy" or "custom" that caused the plaintiff's injury) (*citing Monell v. New York City Dept. of Social Servs.*, 436 U.S. 658, 6984 (1978)).

[162] 42 U.S.C. § 1983.

[163] *Bivens v. Six Unknown Named Agents*, 403 U.S. 388 (1971); *Wilkie v. Robbins*, 551 U.S. 537 (2007).

These causes of action are subject to a number of doctrinal limitations and judicially-created immunities. As pertinent to climate and resilience, the Supreme Court has largely precluded, liability under the Due Process Clause for official inaction,[164] with narrow exceptions where a government duty arises because there is a special relationship between the plaintiff and the government defendant, or because the government defendant created the dangerous condition.[165] Even in such cases, the defendant official may have absolute or qualified immunity if they could not reasonably have known that they were violating constitutional rights.[166]

The potential for climate change to give rise to a constitutional tort has been squarely presented in *Juliana v. United States*— in which the plaintiffs allege, among other claims, that agencies of the federal government violated a group of youth plaintiffs' constitutional rights by causing dangerous atmospheric carbon dioxide concentrations.[167] While both the harm alleged and the remedy sought for government inaction in this case concerned the failure to control greenhouse gas emissions (i.e., mitigation), the court's conclusion may bear directly on the viability of constitutional tort claims for failure to adapt or otherwise incorporate climate risk into government decisions.[168] Rejecting the federal government's motion to dismiss, the U.S. District Court for the District of Oregon concluded that the plaintiffs' allegations concerning the government's inaction on climate change were sufficient, if proven, to establish that the government had created the danger alleged. Given the pervasive role of the government at every level in regulating and managing critical infrastructure susceptible to climate risk—from storm drains and sewers to sea walls and streets—allegations concerning failure to respond to climate risk may prevent even stronger basis on which to assert that the government created the danger causing a plantiffs' harm.

An example of a Section 1983 case that premised liability on failure to address climate-related risk is *Residents against Flooding v. Reinvestment Zone No. Seventeen, City of Houston, Texa*s, filed in late 2016.[169] A group of Houston residents filed this federal action against the City of Houston, alleging its prioritizing of private commercial development projects over its obligation to taxpayers led to "repeated and horrific" flooding in neighborhoods adjacent to a redevelopment area and was a violation of both the Texas and US Constitutional protections of real property.[170] The residents asked the court to stop the government from taking any further action that benefitted "private commercial interests and developers" at the expense of "significant harm and loss to hundreds of residential homes in the nearby Memorial City neighborhoods," unless it could prove that the new projects would not increase flooding risks in nearby residential neighborhoods.[171]

[164] *DeShaney v. Winnebago Cty. Dept. of Social Servs.*, 489 U.S. 189 (1989)(Due Process Clause "language cannot fairly be extended to impose an affirmative obligation on the State to ensure that those [liberty and property] interests do not come to harm through other means).

[165] *E.g. Pena v. Deprisco*, 423 F.3d 98, 109 (2d Cir. 2005); I.W. v. Grubbs, 974 F.2d 119, 121 (9th Cir. 1992); *Penilla v. City of Huntington Park*, 115 F.3d 707, 709 (9th Cir 1997).

[166] *Harlow v. Fitzgerald*, 457 U.S. 800 (1982); Scheuer v. Rhodes, 416 U.S. 232 (1974).

[167] This case also makes compelling claims pursuant to the Public Trust Doctrine, the principle that certain natural and cultural resources—like the atmosphere—are preserved for public use, and that the government owns and must protect and maintain these resources for the public's use.

[168] 6:15-cv-1517 (2015).

[169] 4:16-cv-01458; Court decision available at: http://cases.justia.com/federal/district-courts/texas/txsdce/4:2016cv01458/1361810/20/0.pdf.

[170] Residents against Flooding et al., v. Reinvestment Zone No. Seventeen, City of Houston, TX et al. Complaint, on file with author.

[171] Id.

The residents alleged that despite numerous studies indicating the city needed to do more to alleviate the flooding, it had failed to allocate funding for the needed detention pond projects, instead funding "nonessential projects such as landscaping an old existing detention pond."[172] "The defendants' actions and inactions—knowingly sending stormwaters into the residential neighborhoods that lack adequate infrastructure, without mitigation or necessary infrastructure improvement, and favoring projects for the private commercial interests at great expense to the residential interests—should shock our collective conscience," the complaint noted. "Governmental power has been used to create a dangerous environment for the residents and their property. Governmental power is being used to seize plaintiffs' real property. These abuses of governmental power are violations of the Texas and United States Constitutions for which relief is sought."[173]

In May 2017, the District Court dismissed the claim on procedural grounds. However, it is noteworthy that the court *did* state that the plaintiff's concerns over floods were "not hypothetical" and that the long history of repeated flooding in Houston is "seemingly becoming even more frequent with climate change, mak[ing] it far more likely there will be recurrences than that there will not be and that plaintiffs will suffer from them."[174] The devastating flooding from Hurricane Harvey this past fall revealed just how "not hypothetical" this problem is, and has triggered several new flooding related claims against the City of Houston, one of which is discussed below. In the Northeast, where climate change has meant a seventy percent increase in intense rains, fact patterns similar to this one will likely give rise to potential litigation if municipalities do not take reasonable and equitable adaptation measures.

B. Prohibition of Governmental "Taking" of Public Property without Just Compensation

Federal, state, and municipal governments are constitutionally constrained from "taking" private property without compensation. These taking provisions—which are embodied in the Fifth Amendment of the federal Constitution (and made applicable to states and municipalities via the Fourteenth Amendment), and Article X of the Massachusetts Constitution—provide that a government cannot take private property from an individual unless it does so for a public purpose and gives the original owner just compensation.

There are two broad categories of takings: direct condemnations and inverse condemnations.

- Direct condemnations generally arise out of a government's exercise of its eminent domain authority, which involves a government physically taking private land for a public use, acknowledging the taking, and paying compensation to the private landowner. For example, if a municipality takes a parcel of land near the ocean and uses it to build flood control systems to protect the neighborhood from rising sea levels and storm impacts, that action would constitute a direct exercise of the town's eminent domain authority and would require compensation to the private landowner.

- Inverse condemnations most commonly arise when a government regulation creates a taking of property by eliminating or significantly reducing viable use of the property.[175] In these instances, often referred to as regulatory takings, landowners who want to receive compensation must bring a claim against the government. For example, if a town passes a regulation that prohibits development on properties near the ocean in order to

[172] *Id*.

[173] *Id*.

[174] *Residents against Flooding et al., v. Reinvestment Zone No. Seventeen, City of Houston, TX et al*. Order and Decision at 127.

[175] A non-regulatory inverse condemnation claim was recently raised in *Aldred et al., v. City of Houston and Harris County Flood Control District*, Plaintiffs Original Petition, available at: https://www.courthousenews.com/wp-content/uploads/2017/09/HoustonDams.pdf (still pending). The petition alleges that the City's decision to release water from a dam caused a temporary taking of plaintiffs' property through flooding.

mitigate flood impacts and required emergency responses, the action could constitute a regulatory taking, or inverse condemnation, if it deprives the private landowner of all or nearly all of the value of the property. Whether a regulatory taking has occurred is a fact-specific analysis.

Although more commonly viewed as a risk for government action to address climate change impacts, taking claims may also be raised in connection with government inaction, i.e., for failures to adopt regulations or take steps that would have protected properties from the impacts of climate change. This latter concept is sometimes referred to as passive takings.

As illustrated by the cases discussed in the section on common law claims above, suing municipalities for damages caused by the government's failure to act, as in failing to adequately maintain stormwater systems, is not a recent development. However, in cases to date, the claims typically have arisen out of theories like nuisance and trespass. Although takings claims in such situations are not novel, they are less common and, in the context of climate change in particular, are addressed more in the academic literature than in case law. Nonetheless, this type of claim cannot be ignored as a future risk for government entities.

1. Takings Claims Arising from Government Action

In a direct taking, i.e., when a government exercises its eminent domain authority to take a property, two questions typically arise:

i. Whether the government's action was rationally related to a public purpose. Courts interpret public purposes broadly, including taking private property for economic development even when there is no certainty that a benefit to the public will occur;[176] and

ii. Whether compensation for the landowner was properly calculated. Courts have historically calculated compensation by focusing on the harms created to the fair market value of a property by government action, but a "test suitable for the future must also give great weight to the harms avoided by the [government action]."[177]

For example, the New Jersey Supreme Court directed that a jury consider "all non-speculative, reasonably calculable benefits" accruing to property owners seeking compensation for a government's decision to take part of their coastal properties for construction of sand dunes as part of a shoreline protection project on Long Island Beach.[178] After the court's decision negated the earlier jury finding of $375,000 in compensation, the parties settled on a $1 takings payment.

Indirect condemnation cases most frequently arise in the form of regulatory takings, i.e., when a government enforces a restrictive regulation against a property owner such that the owner is deprived of use or value of the land in a way that necessitates compensation under the taking provisions.

Regulatory takings can be "categorical" i.e., cause a property to lose all of its economic value, or "non-categorical," i.e., leave some economic value in place but still require the government to compensate the private landowner. Invalid land use exactions, i.e., compensation that developers are required to give to the government before proceeding with a project, could also give rise to takings claims.

Proving that the application of a regulation constitutes a categorical taking is difficult. For example, the Supreme Court has held that a regulation does not create a full taking even if it causes a property to lose 95 percent of its value.[179] Massachusetts courts have

[176] *Kelo v. City of New London*, 545 U.S. 469 (2005).

[177] Devon Applegate, *The Intersection of the Takings Clause and Rising Sea Levels: Justice O'Connor 's Concurrence in Palazzolo Could Prevent Climate Change* Chaos, 43 B.C. Envtl. Aff. L. Rev. 511, 512 (2016).

[178] *Borough of Harvey Cedars v. Karan*, 214 N.J. 384, 418 (2013) ("Those benefits are part of the fair-market equation, regardless of whether they are enjoyed by others in the community.").

[179] *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302, 330 (2002).

taken a similar approach. For instance, a landowner claimed that the application of a town's Flood Plain and Watershed Protection Bylaw, which prohibited building any structure except for duck blinds or structures necessary for the cultivation of cranberry bogs or for the propagation of fish, rendered him "completely unable" to use his property when he was denied a special permit to build a road on the site. The court determined that there was no categorical taking because the landowner was left with some potential economic use of his property; the land could still be devoted to woodland, wetland, or recreational use, or as additional acreage for residential abutters.[180]

Property owners can still claim a taking if a regulation places limitations on property that fall short of eliminating all economically beneficial uses; these are non-categorical or partial takings. There is no set formula for determining when a regulation goes too far and becomes a taking, but courts generally invoke the "Penn Central Test," which was established by the US Supreme Court to evaluate non-categorical takings. The three major elements of the Penn Central Test, which require fact-specific inquiries, are: (i) the actual economic impact of the regulation on the person with the property interest; (ii) the extent to which the regulation interferes with reasonable investment-based expectations; and (iii) the character of the government action.[181] With respect to the character of government actions, the Supreme Court has stated that an action is less likely to create a taking when the interference with property "arises from some public program adjusting the benefits and burdens of economic life to promote the common good" as compared to a "physical invasion by government."[182]

In Massachusetts, courts generally follow the Penn Central test, noting that the "inquiry turns in large part, albeit not exclusively, upon the magnitude of a regulation's economic impact and the degree to which it interferes with legitimate property interests."[183]

The SJC applied the Penn Central analysis in a landmark case relevant to climate change adaptation efforts in 2005. The case, *Gove v. Zoning Bd. of Appeals of Chatham*, arose from a complaint by a landowner who was unable to build a residential structure on her property because the town's zoning bylaw prohibited the development of new residential units in the 100-year floodplain. The SJC determined that the application of the zoning bylaw did not create a taking. In reaching that conclusion, the Court considered, among other factors, the character of the government action, which it noted was:

> [T]he type of limited protection against harmful private land use that routinely has withstood allegations of regulatory takings. . . . 'it is undisputed that [lot 93] lies in the flood plain and that its potential flooding would adversely affect the surrounding areas' if the property were developed with a house. Reasonable government action mitigating such harm, at the very least when it does not involve a 'total' regulatory taking or a physical invasion, typically does not require compensation.[184]

Other factors that influenced the Court were more specific to the case. For instance, the Court put weight on the low economic value of the property, which the Court described as a "highly marginal parcel of land, exposed to the ravages of nature, that for good reason

[180] *James v. Zoning Bd. Of Appeals of Pembroke*, 60 Mass. App. Ct. 1119 (2004) (unpublished) (affirming superior court decision), review denied 441 Mass. 1107 (2004).

[181] *Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978).

[182] *Id*. at 124.

[183] *Gove v. Zoning Bd. Of Appeals of Chatham*, 444 Mass. 754, 764 (2005) (internal citations omitted) ("*The Penn Central* framework eschews any 'set formula' or 'mathematically precise variables' for evaluating whether a regulatory taking has occurred, emphasizing instead 'important guideposts' and 'careful examination . . . of all the relevant circumstances.'").

[184] *Id*. at 767 (internal citations omitted).

remained undeveloped," and which the property owner herself had described as having "'no value whatsoever'" even before the zoning bylaw came into effect.[185]

Although inverse condemnation claims have traditionally occurred in the regulatory context, takings claims are also beginning to be raised with respect to government negligence or inaction. For example, a federal court found that the United States Army Corp of Engineer's negligent design and failure to maintain the existing Mississippi River Gulf Outlet exacerbated flood damage resulting from Hurricane Katrina. The increased flooding, although only temporary, was deemed to be a taking requiring compensation to owners of the flooded land.[186] While this case focused on the government's design and maintenance of infrastructure, the next iteration of these cases may, as discussed in the next section, seek to base a takings claim on a government's failure to have ever built infrastructure in the first place.

2. Takings Claims Arising from Government Inaction

A newer theory of takings law envisions takings claims acting not only as a "ceiling" on climate action (as discussed above), but also as a "floor" that mandates a certain level of response to climate change impacts. Although some scholars have argued that the Taking Clause might operate in such a manner, creating an affirmative duty for governments to act or else expose them to liability through inaction,[187] there is little case law that directly supports such a theory of liability for passive takings in the context of climate change. Nor is it likely that this type of claim would arise in all situations.[188]

Cases in which governments have been held liable for a taking caused by flooding or other type of natural disaster often involve a government action that contributed to the damage, not a complete lack of action to address a potential or known risk. For example, in Kentucky, a government's removal of a lateral support from private property during the construction of a highway was linked to a landslide that rendered the residence uninhabitable, thus causing a taking.[189] Similarly, in South Carolina, a takings claim against a county for flooding damage pointed to the government's affirmative act of cutting ditches and casting surface water on private property without permission as the cause of the damage.[190]

More recently, however, Maryland's highest court reviewed a takings claim that did not "fit[] neatly within conventional thinking about inverse condemnation" because the plaintiff's allegations against the state focused predominantly on the *inaction* of the respondent agency rather than on any affirmative action by the agency.[191] The Court addressed this matter of first impression by holding, in a split decision, that "an

[185] *Id*. at 765.

[186] *St. Bernard Parish Gov't v. United States*, 121 Fed. Cl. 687 (2015).

[187] *See, e.g.*, Christopher Serkin, *Passive Takings: The State's Affirmative Duty to Protect Property*, 113 MICH. L. REV. 345, 400–01 (2014) (arguing that governments can violate the Takings Clause by failing to act in the face of a changed circumstances, such as rising sea level); Jennifer Klein, COLUMBIA LAW SCHOOL SABIN CENTER FOR CLIMATE CHANGE LAW, *Potential Liability of Governments for Failure to Prepare for Climate Change* (Aug. 2015) [hereinafter "Klein"] (suggesting taking liability might be colorable against local governments for inadequate preparation for climate change's effects); Michael Pappas, *A Right to Be Regulated?*, 24 GEO. MASON L. REV. 99 (2016) (arguing property contains not just negative rights, but also positive regulatory interests). *But see*, David Dana, *Incentivizing Municipalities to Adapt to Climate Change: Takings Liability and FEMA Reform as Possible Solutions*, 43 B.C. ENVTL. AFF. L. REV. 281 (2016) (describing the theory that state or municipal governments could be liable for failing to take affirmative steps as "doctrinally unmoored and counterproductive.").

[188] *See e.g., Klein at 26* ("While governments obviously do not have an obligation to protect all property from all intrusions, a duty arises where the state exercises regulatory control over the injury-causing condition or where the state is complicit in creating the conditions responsible for harm to the property.").

[189] *Commonwealth, Dep't. of Highways v. Widner*, 388 S.W.2d 583 (KY 1965).

[190] *Hoffman v. Greenville Cty.*, 242 S.C. 34, 38 (SC 1963).

[191] *Litz v. Maryland Dep't of Env't*, 446 Md. 254, 267 (MD 2016) (alleging failures to address pollution and sewage problems).

inverse condemnation claim is pleaded adequately where a plaintiff alleges a taking caused by a governmental entity's or entities' failure to act, in the face of an affirmative duty to act."[192] In reaching its conclusion, the Maryland Court considered cases from several other states, in which the takings claims were premised on the government's asserted duty to act under the given circumstances. For instance, in Florida, a court held that a local government's failure to reasonably maintain a county-owned road, to the extent that landowners were unable to access their property, was a taking because "governmental inaction—*in the face of an affirmative duty to act*—can support a claim for inverse condemnation."[193]

The strength claims for "passive" takings based on governments' inaction to prepare for the impacts of climate change may turn on whether the government entity in question has an affirmative duty to mitigate, adapt, or otherwise respond to such risks. And, assuming such an affirmative duty exists, it may be necessary to determine when a government has sufficient information about the impacts of climate change to trigger the affirmative duty.[194]

[192] *Id*. (emphasis added).

[193] *Jordan et al. v. St. Johns County*, 63 So. 3d 835, 839 (Fla. 5th DCA 2011).

[194] Another issue that may arise in such cases is what role, if any, the "act of God" defense would play in limiting a government's liability. In cases concerning damages from flood events, courts throughout the country have considered questions such as: (i) whether a government should be liable only for its "share" of damages from a flooding event, thus potentially implicating climate change attribution issues; and (ii) whether the "act of God" defense is unavailable when flood events are not unprecedented and/or unforeseeable.

PART IV:

Summary of Proceedings

Part IV is broken into three sections: (I) Structure of workshops; (II) Breakout session discussions; and (III) An analysis of workshop survey results. Key themes and recommendations are discussed in this section but are more thoroughly synthesized at the end of the Report in the Conclusion.

I. STRUCTURE OF WORKSHOPS

The first workshop in this series was held for design professionals including architects, engineers, and planners. Other private-sector and nonprofit thought leaders were also included, such as representatives from the professional liability insurance industry and attorneys representing design professionals. The second workshop was held for government officials at local, state, and federal agencies. Some nonprofit thought leaders were also included. A complete ist of participants and their affiliation is included in Appendix B.

Each workshop began with two presentations—a presentation on the most up-to-date climate science for the City of Boston,[195] and a presentation on current legal trends and existing and future climate-related liabilities (including many of the cases presented in Parts I, II, and III of this Report).[196] The purpose of these presentations was to provide a scientific foundation for the discussion of climate adaptation and to provide context and shared legal language for the discussion of liability. Several framing questions were posed to workshop participants during the breakout sessions to guide exploratory conversations but dialogue with participants was very much open-ended. A full list of these questions are included in Appendix C.

All workshop participants were asked to fill out a brief survey at the conclusion of the day to help CLF and others gather general information about the participants' professional experience in climate adaptation and feedback on the workshop content. The results of these surveys are discussed in-depth later in this Report. A copy of these surveys are included in Appendix D.

While many of the workshop participants are professionals in Massachusetts, the material discussed in these workshops and in this Report applies more broadly to New England as a region and even nationally.

II. BREAKOUT SESSION DISCUSSION

Breakout session discussion topics and framing questions were tailored to the different audiences of the two workshops based on the unique legal and liability considerations of each group of participants. In this section we discuss each workshop separately but also draw parallels between the discussions of each group.

The first and second workshops focused on legal liabilities in areas such as negligence and other statutory or regulatory requirements imposing a certain standard of care. The second workshop also delved into takings claims that might arise from government-initiated adaptation strategies. Each workshop also included a discussion of relevant defenses to these claims, including that of sovereign immunity for the governmental officials' workshop.

[195] Presentation delivered by Mia Goldwasser Mansfield, Climate Ready Boston Program Manager.

[196] Presentation delivered by Elena Mihaly, Staff Attorney at Conservation Law Foundation

A. WORKSHOP I: DESIGN PROFESSIONALS

Summary

This workshop began with a presentation on legal liabilities, which not only provided the context for discussion but sparked important questions from participants that helped to frame the day's proceedings:

What is the appropriate standard of care for design professionals? Who owns the risk and in what situations? What regulatory framework is needed to enable design professionals to more easily go beyond the status quo? What level of government should be leading these efforts?

Participants were asked to identify some of the current barriers to climate adaptation they face as well as think through the legal and professional risks associated with climate change in their practice. These discussions are summarized more in-depth below but some of the key takeaways include:

- Many design professionals are acutely aware of their duty to bring climate-related issues to their clients but this can be complicated by uncertainty regarding the appropriate design standard or baseline and client pressures to choose the least costly alternative.
- Outdated information from governments can make it difficult for design professionals to "sell" climate solutions to clients because they are based on backward-looking data (e.g., floodplain maps).
- Considering climate risk data and designing to a higher or better standard can be inhibited by existing statutes, codes, or regulations that make certain elements difficult or more costly to implement (e.g., balancing higher ground floor elevations with American Disability Act ("ADA") requirements).
- There is a desire to better understand how design professionals can protect themselves from climate-related liability for decisions ultimately made by clients, which may require documenting concerns, incorporating climate impacts into disclosures, or walking away from a project.

Barriers to Climate Adaptation in Practice

Participants were asked to identify some of the common barriers they face to implementing climate strategies. Specifically, they were asked whether they had ever encountered a barrier to a preferred design (e.g., going above and beyond a building code to address climate vulnerabilities), and what the barrier had been. Many participants had experienced this scenario and they identified a multitude of barriers. Participants were also asked to identify the main barriers to more widespread adoption of climate resilient design and the types of solutions best oriented to address them (e.g., market, regulatory, social, communication, etc.).

The barriers identified fall under five general categories: (1) permitting, codes and zoning; (2) lack of context or coordination; (3) lack of standards or metrics; (4) lack of education; and (5) perceived costs and risks by clients. It is worth noting that participants also identified several site-specific or contextual challenges as barriers. For example, elevating a project that would break from the existing streetscape design or sidewalk elevation. However, the solution to many of these site-specific barriers are likely addressed under the other five categories. Many of these barriers underscore the lack of an existing framework for identifying appropriate climate adaptation measures and implementing them.

In some cases, there are regulatory barriers that prevent design professionals from implementing climate measures; for example, existing zoning and building codes that prevent adaptation strategies like elevating buildings to a certain height above base flood elevation. Participants also noted that going above and beyond current building codes is rarely attractive to their clients because there is no accepted set design standard for climate resilience. As a result, design professionals are sometimes hesitant to go out on a limb even when they are concerned about the implications of failing to address climate-related issues. There was general consensus that integrating climate adaptation into projects would be more feasible and less complex if there were more flexibility in zoning, regulations, and codes.

In addition, participants noted that having too soft of a framework for climate adaptation (as opposed to definitive code requirements) can be problematic. Design professionals (architects and engineers in particular) are used to mitigating risks and generally do so by following codes. These codes are typically either prescriptive (e.g., the maximum allowable distance between exits) or performance-based (e.g., a minimum ventilation rate based on air changes an hour). That is, to be effective and implementable, the code cannot merely set forth aspirational or wishful standards. For example, Boston's Article 37 Climate Resiliency Checklist was established in 2013 to provide a framework for developers and design professionals to analyze potential impacts to a property and consider solutions but did not provide a set standard or threshold for the appropriate level of response or intervention. The checklist is in the process of being updated and will recommend a 40" sea level rise standard going forward but nothing in the checklist requires design and construction to this standard. There is also some uncertainty over how this recommended standard will evolve over time as science improves. More certainty, predictability, and clarity around the appropriate standard and level of response is needed, which may mean more definitive codes.

Participants also expressed frustration that the existing statutory and regulatory framework creates a "lose-lose" situation from a liability perspective. On one hand, consideration of, and design incorporating climate risk can be difficult because of the potential complexity and perceived cost. On the other hand, implied statutory and regulatory obligations and standard of care can leave professionals open to liability if they do not consider climate risk data and design and build for climate adaptation.

Another key barrier identified was the lack of coordination and consistency between projects and government entities. Specifically, attendees noted the problems resulting from different locales relying on different data and metrics, as well as reliance on the Federal Emergency Management Agency's (FEMA) backward-looking flood data. More broadly, participants commented that there is currently no set design standard or investment-grade performance metrics that can assist design professionals in making decisions and successfully pitching long-term climate adaptation measures to their clients. Specifically, participants noted that (1) it is unclear who should dictate regulations and that there is a need for a broader group with a longer-term vision, and (2) it is unclear whether a push for climate resilient standards will result in positive or negative results.

As a result, it is difficult to motivate client owners to take action on climate risks. This can be problematic from a liability standpoint because although ultimate decision-making power lies with the client, design professionals could still be held responsible for how they advise their clients, what information they provide, and how they voice or document concerns.

Finally, participants noted that lack of education plays an across-the-board role in preventing implementation—clients, community, and others. Education for this purpose does not just include general knowledge of climate change and its impacts but a deeper understanding of risk, considerations for different players, and recognition that there is an essential nexus between climate impacts and the day-to-day priorities of community members.

Chart 1 on page 41 summarizes some of the barriers described for each of these categories and a narrative description of the results follows.

Chart 1: Barriers to Climate Adaptation (Design Professionals)

Permitting, Codes & Zoning	• Regulations constrain what the design professional can do with building designs to make them more resilient (e.g. efforts to raise building due to sea-level rise run up against requirements for handicap access pursuant to Americans with Disabilities Act (ADA) requirements) • Height limitations in zoning codes restrict ability to elevate buildings • Permitting process takes longer if evaluate more innovative solutions • Prior precedent overshadows innovative ideas • Standards for infrastructure providers are outdated, but still the norm (e.g., transformers on ground floor) • Difficulty and complexity of going above and beyond the current codes • Complexity of retrofitting (e.g., homeowner wants to seal basement but discovers out of compliance with other things)
Lack of Context or Coordination	• Local governments provide backward-looking data (e.g. FEMA maps are often decades old) • Unclear who should dictate regulations; this should be done by a broader group with a longer-term vision than present (trade groups tend to be myopic) • Undersized infrastructure systems impact ability to use certain interventions depending on location • Individual actors do not want to take on larger liability for district-wide protection measures • Ambiguity of risk (e.g., who will own risk at the end) • Different considerations for owners vs. renters
Lack of Standards or Metrics	• No set design standards with regard to climate resilience • Unclear definition of resiliency • Lack of a "business case" for resilience and long-term adaptation measures (e.g., no standardized, investment-grade performance metrics)
Lack of Education	• Lack of education among clients • Lack of community voice in development decisions because climate is not viewed as a day-to-day priority
Perceived Costs and Risks	• Client pressure to choose the least costly alternative (e.g., increased cost associated with elevated buildings) • Design professionals do not want to make suggestions that are not required by code • Marketing and business barriers (e.g., a request for proposal may ask a design professional to animate the first floor and that professional takes the risk of losing the RFP by pointing out potential climate impacts) • Property owners and developers are not looking toward the future • Owners/clients do not see any near-term reduction in cost credit from reduction in risk • Patience of the capital behind the developer (e.g., short-term investment means developer is less interested in resilient design; long-term, more interested) • Pushing for resilience standards viewed as a double-edged sword – uncertain what unintended consequences may arise

Potential Solutions to Climate Adaptation Barriers

Participants were asked to identify potential solutions to the identified barriers. These solutions fall into five general categories: (1) education and research; (2) regulation; (3) incentives; (4) funding; and (5) coordination. Many of these solutions are underpinned with the need for additional research and clarity. For example, a common theme was the need to prove that climate adaptation measures and climate resilience have long-term cost and co-benefits. Another common theme was the need for a combination of carrots and sticks.

In terms of sticks, participants identified changes to existing regulations including state regulations, local zoning and bylaws, and real estate disclosure laws. Ideas for incentives included a pilot program accompanied by soft metrics akin to the LEED pilot credit program and third-party certification programs.

Chart 2 below summarizes some of the solutions identified for each of the categories identified above.

Chart 2: Potential Solutions to Climate Adaptation Barriers (Design Professionals)

Regulation	• When codes are slow to change, index them to dynamic data • Make flood history part of real estate disclosure for all sales • Establish a clear path for designers to be legally protected when stepping outside of existing codes • Establish more legal liability for owners • Revisions to local zoning codes • Revisit relevant state regulations to update where relevant (e.g., Chapter 91) • Develop an inclusionary housing policy that includes investing in existing housing that is currently susceptible to climate risks, so that not all resilient design focus goes towards new structures • Make life-cycle costs more visible (e.g., for short-term developers, make life-cycle costs more standardized; buyer will see the real cost of the property and won't be willing to overpay) • Infuse climate resiliency into the procurement process • All new development includes Low Impact Development/green infrastructure requirements
Coordination	• Weave climate planning into regulatory decision-making • Prioritize regional scale impact. Seaport Bond Bill could be a model for this
Incentives	• Incentive programs for owners to include climate resilient design in their plans for new development • Resilience audit similar to an energy audit that provides incentives for retrofits • Develop a third party certification program similar to LEED that can act as both a communication and action tool • Request for Proposals that include climate resiliency as a component

continued on next page

Chart 2: Potential Solutions to Climate Adaptation Barriers (Design Professionals) continued

Education & Research	• Hire a consultant to educate clients • Education efforts more broadly on the long-term benefits of climate resilience • Identify who owns risk and educate parties • Educate and empower tenants to be drivers (i.e., identify where tenants have leverage, like renegotiating big leases) • Seek ways to make the connection for community members so that they see climate change as impacting their day-to-day lives • Develop resiliency guidelines or "soft metrics" similar to LEED pilot credits
Funding	• Taxes to pay for infrastructure (e.g., Netherlands water tax is used for flood mitigation projects) • Project mitigation and off-site housing fees (e.g., instead of building new housing as the offset, require the developer to provide the money as grants for retrofits)

Assessing Professional and Legal Risks

The adequate "standard of care" (duty to the client) was an essential component of this discussion. The questions posed to the group centered on whether climate change could elevate the standard of care for design professionals and whether failing to appropriately act on climate could have negative consequences either through professional or legal liability.

There was general consensus among participants that design professionals can and should serve a critically important role in influencing the selection of design options. Further, design professionals can and should advocate to their clients appropriate and sensible consideration of relevant factors that are sensitive and responsive to both long and short-term environmental impacts. While participants agreed that design professionals should speak up for what they think is "right", and point out problems or concerns they have to a client, there was a divide in opinion about professional and legal obligations.

There were two schools of thought:

1. Code compliance alone is not enough. Codes and regulations set minimum standards for projects but mere compliance does not always represent or certify good design practice. The standard of care may mean going beyond this in order to achieve good design. In these instances, a design professional with a client that is unresponsive to climate-related concerns may wish to carefully document his or her concerns to protect against professional liability.

2. When considering whether a professional has met his or her standard of care, one must consider the "risk-control nexus." Essentially, design professionals cannot control everything that may go wrong with a project and therefore the risk should not be assigned entirely to them. Standard of care is measured at the time of the service within the terms of an agreement, operating within the scope that is provided by the client. Design professionals provide services, not products, and this distinction is well-recognized in the law and is why strict liability principles are uniformly respected as a basis for professional liability.

However, all participants agreed that it is ultimately the client who makes the decisions and if a design professional does not believe that the final decision reflects good design practice, they should consider whether they want to continue working on the project.

Participants identified several protective measures that could be helpful in dealing with risky projects and uncooperative clients:[197]

- Clearly articulate and document all possibilities and risks associated with a project (e.g., disclosures);
- Consider a release of prospective liability (i.e., indemnification or release by the owner);
- Focus on reduction of risk in the request for proposal stage (e.g., knowledge of site and client—what type of work will have to be done and what is the client willing to investigate?);
- Understand your contractual obligations and whether it puts more risk on you than normal;
- Engage in strategic planning to think about how you will be dealing with these issues over the long-term and responding to clients into the future; and
- Careful consideration of clients (e.g., decision-making based on the quality of the client and the project).

Participants also noted that "selling" adaptation and resiliency to clients can be difficult for a variety of reasons. For developers, it is frustrating to be asked to meet new or higher standards when their projects are surrounded by other types of infrastructure that do not (e.g., streets, stormwater/wastewater systems, etc.). It is also unclear what the ultimate baseline is for assessing whether a project is adaptive or resilient. This is

[197] Measures identified are based on remarks made by participants in the context of a workshop setting. These ideas have not been fully vetted by CLF, GRC, BSA, or any of our workshop partners for viability at this time.

particularly complex given the varying sets of data and projections produced by different consultant, academic institutions, and government entities. Participants noted that using an event like Hurricane Sandy as a stress test for the permitting and review of projects could be a measure to address the baseline issue. This would be an educational experience for the client to learn what the project vulnerabilities are and require them to address how their building would respond in different scenarios.

Other considerations discussed included the need to identify innovative ways to address cost issues through the introduction of things like new technology and cost mechanisms for market payback; the importance of professional societies who participate in code reviews to include issues of climate change into the review process; and the need for more public-private partnerships that emphasis long-term sustainability over initial cost.

In addition to discussing the risks associated with failing to act on climate, participants were asked to consider what risks might be involved with taking action on climate. For example, if a design team implements on-site adaptation measures that are project-specific and not coordinated on a larger neighborhood-wide or district-wide scale, could there be ramifications for abutting properties or infrastructure? Participants noted that in some cases, if individual property owners set their own standards for adaptation measures, those measures may have adverse effects on abutters. There was general consensus among participants that there is a need for more coordination at different levels and across different stakeholder groups but there is also a need for local zoning and district resilience plans that look at areas on a smaller geographic scale to address unique risks. Participants suggested approaches including community-wide regulations; alternative project delivery (e.g., design-build); and consideration in financing, procurement and contracting practices.

With respect to liability and risk, participants noted that "impact on neighbors" and potential liability for causation of damage to other individuals or sites is not a new consideration for the design community but that in the case of climate change, we need to think about how we evaluate a design on a neighbor thirty years out and assess what the liability might be down the line. There is also concern about how risk is divided among different levels or parties when large-scale or district-wide measures are undertaken; for example, a seawall. It was noted that a regulatory group could be needed to oversee all aspects and considerations in a certain geographic region or area to avoid piecemeal approach to adaptation.

Finally, there was recognition that climate change presents a new frontier for design professionals and assessing risk. Architects, engineers, and other professionals deal with many risks which are serious and life-threatening including but not limited to gravity loads, wind loads, combustible materials, and occupational safety and health. But climate change is in a league of its own with anticipated risks that increase exponentially over time. Participants noted that there isn't a precedent for managing this kind of risk—in the past when we have acknowledged new risks like fire or earthquakes, there was an assumption the risks were static. This entire frame of mind needs to shift to accommodate the new reality.

B. WORKSHOP II: GOVERNMENT OFFICIALS

Summary

Consistent with the first workshop, the government officials' workshop began with a presentation on legal liabilities, which not only provided the context for discussion but sparked important questions from participants that helped to frame the day's proceedings:

What would a court consider to be a sufficient level of response from cities, towns, and the region, considering the limitations of budgets and permitting? Do city and state climate adaptation plans and reports create a

duty to implement the actions identified in the plan or report? How do governments know which predictive models and data they should be using and what courts will expect? Who owns the risk in the case of intergovernmental or interagency projects?

Participants were asked to identify some of the current barriers to climate adaptation they face as well as think through the legal and professional risks associated with climate change in their practice. These discussions are summarized more in-depth below but some of the key takeaways include:

- No single level of government can take on these issues—there needs to be intergovernmental and interagency coordination.
- In some areas, there is a need to establish new authorities or "reengineer" existing authorities to take on these issues.
- There is resistance to establishing new regulatory frameworks for adaptation (zoning, permitting, codes, ordinances) because of lack of education, implications for homes and businesses, and complexity of the issues (i.e. what is the appropriate design standard, what climate science should be used, what role does uncertainty play).

Several general observations about climate-related liability were also made: (i) liability is not something that is regularly discussed by city and state officials outside of legal departments especially not with regard to "inaction", (ii) government officials typical operate under the "best intentions" assumption—that their actions are in the best interest of their citizens and (iii) this type of liability is not perceived to be a big threat right now and is more of a future problem—the more immediate concern is emergency preparedness for current natural hazards and threats.

Participants also expressed concern that putting a liability lens on adaptation work could be counterproductive if it has a paralyzing effect on government agencies. Many officials already feel like they are in a lose-lose situation when it comes to implementing climate solutions and are looking for a clear path forward.

Barriers to Climate Adaptation in Practice

This workshop began with a discussion of who the important constituencies are for addressing climate adaptation and the ways they are encouraging or preventing progress. There was wide recognition that there are limitations to what can be accomplished by government entities alone and that it is essential to leverage the capacity of private institutions, academic institutions, companies, hospitals, developers, and residents. For instance, academic institutions play an important role in generating new ideas and providing the technical capabilities and capacity to help cities and towns with local issues and grant writing.

Residents were identified as a particularly important constituency in areas that are already fully developed and where retrofitting is needed. Other important constituencies include developers, regulatory boards, utility companies, and state legislatures. For example, if a city wants to pass an ordinance, they need the capacity or authority to do so, which often requires buy-in from other constituencies and levels of government. Similarly, there is a need for private-public partnership agreements and private financing but cities in Massachusetts cannot engage in such partnerships without express home-rule allowance of the State.[198] Finally, the influence of industries like insurance—who have the power to put hazard mitigation and resilience requirements on the insured—were noted as being essential to creating change.

[198] In Massachusetts, cities and towns enjoy express authority to use alternative project delivery methods but this is limited under Chapter 149A of the General Laws. Chapter 149A does not permit the use of private equity or debt financing to fund certain public building and public work projects and municipalities must seek legislative approval to use alternative delivery methods that include a greater role for private partners. For a more complete discussion, see: https://www.mma.org/sites/default/files/resources/adv_28-2_pub-private-partner_0.pdf.

Participants also discussed who should be taking the lead on climate adaptation. Specifically, discussion focused on whether planning and implementation efforts should be driven at the local, regional, state, or federal levels, and what structures, if any, are in place to facilitate coordination of efforts across different levels. There was concern about who "owns the risk" when efforts are coordinated across levels and what risks may exist for those who are pioneers on innovation versus the status quo. Some specific questions included: Have there been cases of municipalities suing higher forms of government and demanding action be taken? How do we lead on climate innovation when there are limited precedents to support it? Does the duty of care change for innovative solutions (like green infrastructure projects) than for more traditional hard-engineered approaches?

There were mixed opinions on who is best-positioned to lead on climate adaptation—some participants noted that action at the local level is important because climate impacts and challenges are geographically unique. Others indicated that leadership may differ depending on the scale of adaptation being considered. For example, areas like critical infrastructure, buildings, and coastal protections are sometimes managed under different levels of government. There was general consensus that coordination across efforts is key; for example, regional coordination is important for consistency in an area. However, it was noted that there are often conflicting priorities at different levels of government which can create a barrier to coordination and requires alignment at the local, state, and federal levels.

The items identified as being important for leadership and coordination going forward were:

- A matrix at different scales with different systems that allows people to see what the different responsibilities are and identify places where we do not have the right authorities in place to do the work.
- Ensuring that regulatory review at different levels of government are complementary not contradictory.
- Depending on whether gaps are identified in the matrix, we may need to create new authorities or "re-engineer" existing authorities similar to the Massachusetts Water Resources Authority (MWRA).
- Collective action and ability to bridge/synthesize between the mitigation and adaptation sides of climate change efforts.

Assessing Risk and Maneuvering Obstacles

Participants discussed how existing statutes, regulations, and policies aid or inhibit the implementation of climate resilience strategies. Participants exclusively described inhibitors to implementation. The top example cited as an inhibitor of implementing climate resilience strategies was the Federal Emergency Management Agency (FEMA) flood maps. It was noted that FEMA maps are backward-looking, not forward-looking (i.e., they do not include climate projections, only historical data) even though the funds are going toward planning and building for the future. State building codes were also identified as an inhibitor. Cities and towns in Massachusetts cannot require developers to build to a standard that exceeds the State Building Code—limiting the city's ability to use more stringent code requirements in its climate resilience strategy. A summary of identified statutes, regulations, and policies are listed in Chart 4 on page 49.[199]

Participants noted that the Massachusetts Environmental Policy Act (MEPA), the state version of the National Environmental Policy Act (NEPA),[200] inhibits resilient design because it is toothless. They noted that MEPA could be more of an aid to foster resilient design if it issued guidance on sea level rise projections and what should be incorporated in proposals. For example, if MEPA required developers to study the impacts of different scenarios (e.g., different categories of storms,

[199] In accordance with MGL c.143 §98, a city or town in Massachusetts could petition the state Board of Building Regulations and Standards (BBRS) to adopt more stringent requirements but because this places the onerous on individual municipalities, it may not be the ideal solution.

[200] 42 US.C. §§ 4321-4370(h).

extreme precipitation events, etc.) on their properties and their neighbors' properties. Other statutes, like the Massachusetts Wetlands Protection Act ("WPA"),[201] were criticized by participants for not being forward-looking enough to protect future areas that under modeled scenarios that will become lands conducive to wetland habitat. The current state wetlands regulations use historic information to guide habitat preservation and do not take into consideration potential inland habitat migration due to climate change. Participants noted that one solution could be for local bylaws to consider climate change. For example, some municipalities in Massachusetts have passed wetlands bylaws that are more restrictive than the WPA and regulate more expansive areas. However, since this places the onerous on individual municipalities and may not provide for uniform regulation, another option would be to amend the WPA to consider more flood protection across-the-board; for example, extending protections to the 500-year floodplain and consider more restrictive standards for development in current and future floodplains.

Other statutes, including the Chapter 91 Waterways Regulations[202] were identified as inhibiting progress on flood protection projects, like living shorelines because of certain provisions that aim to safeguard maritime use. Finally, participants noted that it can be very difficult to amend state zoning laws and regulations, including Chapter 40A, which also inhibit progress on adaptation. Ultimately, there was consensus that many of the existing statutes, regulations, and policies could potentially be mechanisms for climate adaptation if they were updated.

Participants were asked to what extent the notion of climate-related liability is being discussed by the staff in their agency or department. Many local government officials noted that liability is not addressed in municipal entities because their concerns are more related to the "best intentions assumption"—that is their actions are in the best interest of citizens. In particular, liability associated with "inaction" is not discussed. Participants indicated that liability has been discussed in terms of climate change preparedness (e.g., storm response) but is not generally believed to be a threat now versus a future threat. Many participants were surprised to learn that recent suits have tested the success of bringing claims against governments for inaction; particularly use of takings law to bring claims against the government for failure to prevent flooding.

[201] The Massachusetts Wetlands Protection Act is a state law that protects wetlands and other resource areas, such as land subject to flooding, riverfront area, and land under water bodies, waterways, salt ponds, fish runs, and the ocean. The law regulates many types of work in resource areas, including vegetation removal, regrading, and construction of houses, additions, decks, driveways, and commercial or industrial buildings.

[202] The Chapter 91 Waterways Regulations are regulations enabled by the Public Waterfront Act that protect, manage and promote public use of the Commonwealth's tidelands and waterways. The Public Waterfront Act created a mandatory licensing process to regulate private activity on coastal and inland waterways and tidelands, including "filled" tidelands.

Chart 3: Existing Statutes, Regulations, & Policies that Inhibit (Government Officials)

Existing Statute, Regulation, or Policy	Reason for Inhibiting Implementation
FEMA Flood Maps	Uses historical data instead of forward-looking projections and data that account for climate impacts
State Building Codes	Dictates what measures can be implemented at the local level (e.g. local jurisdiction are unable to implement more stringent building codes) and many state building codes do not have codes designed for future impacts
MA Wetlands Act	Is not preemptive; needs to consider more expansive flood map protections
MEPA	Does not contain mandatory duty to act
Chapter 91 (Waterways Regulations)	Can sometimes preclude certain flood protection projects, like living shorelines
State zoning law and regulations (e.g. Chapter 40A)	Is very difficult to amend
State and local hazard mitigation planning	Does not integrate climate change or include forward-looking projections and data

In general, the participants were less familiar and receptive to liability issues than the design professionals in the first workshop. This is likely because they have had less direct experience with liability claims in their practice and enjoy a certain level of immunity. However, there was consensus that government agencies should be well-versed in this topic and that education and resources on climate-related liability would be valuable. It should be noted that using legal liability as a lever to force implementation at the governmental level could have the unintended consequence of causing complete paralysis. On one hand, government agencies are struggling with intergovernmental coordination, prioritization, funding, and education while simultaneously faced with a regulatory framework that sometimes inhibits progress. On the other hand, there are statutes and regulations on the books today that could create liability for their failure to act on climate change.

III. WORKSHOP SURVEY RESULTS

Participants were asked to complete brief surveys at the conclusion of the workshops. The purpose of these surveys was to gather general information about the participants' professional experience in climate adaptation and feedback on the workshop content. The survey questions were primarily multiple choice with one short answer question at the end. A copy of the survey for each workshop is included in Appendix C.

We acknowledge that these workshops were attended by roughly 60 participants and these survey results are therefore not necessarily representative of the entire

body of professionals because our sample size is not statistically significant. Nonetheless, we have identified the following observations from within that small group.

Participants of both workshops were asked:[203]

- In your opinion, to move the needle on climate adaptation should we design our way forward or regulate our way forward?
- Has your perception of professional or legal risks as it related to climate change increased as a result of this workshop?
- Would you recommend this workshop to a colleague?

Participants of Workshop I: Design Professionals were asked:

- Do you routinely employ a climate expert to guide your decision-making on development and construction of new development/infrastructure?
- Have you ever felt pressured to ignore climate-related issues with a site for fear that there would be negative consequences for you as a professional (e.g. your design team won't be selected for a job, it could impact the financing or insurance of the building, it will make selling the property more difficult, etc.)?

Participants of Workshop II: Government Officials were asked:

- Do you routinely consult the best available climate science on future impacts and conditions when you make decisions about development/infrastructure?
- Has the fear or threat of litigation either (1) prevented you from implementing a climate resilient strategy or policy or (2) caused you to alter/dilute your original vision for a climate resilient strategy or policy in order to make it politically/legally feasible for implementation?

We also asked survey respondents to identify their professional background. For the first workshop, 55% of respondents were from design backgrounds (e.g., architects, engineers, planners, and construction), 19% business, insurance or other; 16% legal professionals; and 10% scientists. Of the respondents that identified as being in the design field, the majority were architects followed by planners and engineers, and then construction professionals.

For the second workshop, 74% of respondents were government employees, 19% non-governmental organizations, and 7% other. Of the government employees, the majority were employed by local governments followed by state government, and then federal.

Key findings for the design professional's workshop included:

- **45% of respondents** said they had felt pressured at one time or another to ignore climate-related issues with a project for fear that there would be negative consequences to them as a professional
  - The majority of architects that answered this question responded that they had felt pressured, whereas other professions were more evenly split or the number of respondents was too small to indicate a trend
- **36% of respondents** said they routinely employ a climate expert to guide decision-making
  - The majority of engineers that answered this question responded that they *do* routinely employ a climate expert whereas the majority of architects that answered this question responded they *do not*
- **70% of respondents** said they believe both regulation and design are needed to move the needle on climate adaptation
  - 23% of respondents said regulation alone will move the needle
  - 6% of respondents said design alone will move the needle

[203] Participants were also asked to identify their professional background so that we could provide a more comprehensive breakdown of answers by sector.

Key findings for the government official's workshop included:

- **56% of respondents** said the fear or threat of litigation has neither prevented them from implementing a climate resilient strategy or policy nor caused them to alter/dilute their original vision to make it politically/legally feasible for implementation

— 15% of respondents said the fear or threat of litigation has *both* prevented them from implementation and caused them to alter/dilute original visions

— 11% of respondents said the fear of threat of litigation has caused them to alter/dilute original visions only

- **82% of respondents** said they routinely consult the best available climate science when making decisions about development and infrastructure
- **48% of respondents** said they believe both regulation and design are needed to move the needle on climate adaptation

— 37% of respondents said regulation alone will move the needle

— 15% of respondents said design alone will move the needle

Across both workshops:

- **93% of respondents** across both workshops said that their perception of professional or legal risks as it relates to climate change increased as a result of the workshop and 100% said that they would recommend this workshop to a colleague.

Finally, we asked survey respondents to describe what they believe appropriate next steps are. There were several common themes to these responses across both workshops including the need for continued dialogue across multi-disciplinary professionals and the private and public sectors. In particular, both groups expressed the desire to have a follow-up workshop that combined design professionals and regulators. Interestingly, the responses from the governmental officials' workshop were primarily actions including more research and written guidance, education, and workshops whereas the design professionals had many more respondents call for a strong move toward implementation actions. Responses from the design workshop are categorized into three buckets: (1) research and guidance, (2) education and workshops, and (3) implementation. Responses from the government workshop are categorized into two buckets: (1) research and guidance and (2) education and workshops. A summary of responses are provided in Charts 4 and 5 on pages 52 and 53.

Chart 4: Next Steps Identified by Participants of the Design Professionals Workshop

Research and Guidance	• Produce a written product of the legal research and workshop outcomes (in particular to express the desire of the design community for regulations and policy incentives) • Provide a series of case studies that help illustrate the different types of risks and how they can be resolved • Do a deeper dive into existing case law and creation of a database for information on the evolving legal framework (i.e., case law and regulatory changes that professionals should be aware of) • Create a climate vulnerability and resilience checklist
Education and Workshops	• Hold another workshop for both design professionals and regulators together • Hold more workshops that include other kinds of stakeholders including community members, developers, and banks • Hold a workshop that is solution focused rather than barrier/hurdle focused • Do a briefing on this workshop for key government officials • Present this content to larger audiences (i.e., "take the show on the road") • Educate developers and tenant communities on these issues
Implementation	• Develop proposed regulations and incentives and develop an advocacy campaign to get them enacted • Develop a set of guidelines for owners and developers to consider in commissioning design for their projects • Develop regulatory improvements to systematically address resilience • Get involved in code development and discussions • Develop a vision for resilience and a legal framework that allows it • Act on best ideas with regard to regulatory updates and best practices

Chart 5: Next Steps Identified by Participants of the Government Officials Workshop

Research and Guidance	• Produce a written product of the legal research and workshop outcomes • Develop written guidance on municipal liability for resiliency issues and relevant case law • Develop a handbook of case law and legal strategies • Develop a short guide on current regulations and cross-reference with case law examples of how they might be revised or legally challenged • Develop a handbook with examples of "good future design" and regulations that allow it • Legal exploration of new practices (e.g., a climate change checklist) • Explore free market solutions and incentives for private parties to act • Deeper dive into this issue as it specifically relates to green infrastructure as an adaptation option • Deeper dive into the role that insurance plays
Education and Workshops	• Hold a second workshop series with the same participants and or have quarterly meetings • Hold a workshop on best practices and success stories in the following areas: funding sources and revenue streams, regionalization, innovative technologies and strategies • Develop a working group to narrow in on state and local laws and regulations that are barriers to resiliency and work together to propose changes and or new laws and regulations • Engage developers and government officials together in a dialogue in a neutral, non-project setting • Present on this content to individual municipalities with recommendations for action (e.g., offer the workshop for municipalities through MAPC) • Develop a regional presentation tailored for specific areas • Have sessions with city solicitors, town councils, city legal staff, and state regulators • Hold a hack-a-thon that challenges teams of designers, planners, and policymakers to adapt a neighborhood of Boston to climate change

Conclusion and Recommended Next Steps

The recommended next steps outlined below seek to address the main issues and ideas that were identified during the course of these workshops for the state of Massachusetts. However, given that many states encounter barriers to implementing climate adaptation efforts, these recommendations could be applied to other states as well.

1. FACILITATE A DIALOGUE BETWEEN THE DESIGN COMMUNITY AND REGULATORS

It became clear during the course of these workshops that the design and the regulatory communities have not had the opportunity to engage in a dialogue on this topic. For instance, many participants in the government officials' workshop were surprised to learn that the design community is in favor of stricter regulations and standards as they relate to climate change preparedness. A facilitated dialogue between these two communities could help break down false perceptions about motives and desires. Furthermore, this step is important for ensuring that the design community has a voice in the regulatory process. Changes to zoning code, building codes, and even statutory revisions would benefit from having the design community's perspective and feedback.

Facilitating this dialogue may also jump-start implementation efforts because some of the barriers identified by government officials in establishing a climate adaptation-friendly regulatory framework revolved around not knowing the right design standards and codes. Providing this expertise and buy-in may give government agencies the confidence needed to move the needle forward.

2. REFINE LEGAL LIABILITY PRESENTATION AND CONTINUE TO USE IT AS AN EDUCATION TOOL

We found that participants of both workshops overwhelmingly found the legal content that we presented to be informative and useful. In fact, many participants requested that as a follow-up step we provide more detailed and in-depth reviews of relevant case law, updates to regulations and statues, etc. Lack of education was also identified as one of the key barriers to implementing climate adaptation measures. While the legal content will need to be edited and refined based on the audience to whom it is presented, providing this information to a more expansive audience could elevate the discussion of climate-related liabilities and help move the needle on implementation.

This legal education should target several audiences: (i) educating government officials at all levels who are not well-versed in legal liability issues but are working in relevant areas such as planning, engineering, code inspection, public health, and more; (ii) educating elected officials including governors, mayors, city councils, and the legislature, all of whom are important political allies and whose buy-in is essential for implementation efforts; (iii) a more diverse group of private sector professionals including not only design professionals but contractors, real estate agents, developers, property managers, insurance agents and more. The culmination of this education and outreach may be a symposium, conference or other large convening.

3. EXPLORE CURRENT DISCLOSURE REQUIREMENTS AND CONSIDER CHANGES TO EXISTING SYSTEM

This would apply to not only real estate disclosure requirements but also disclosure practices for design professionals including architects and engineers. In Massachusetts, there may be a need for stricter real estate disclosure laws considering that property owners are currently not required to disclose the flood history of a property. There may be a further need to include future hazards (climate change) in disclosure as so far as it relates to the expected life of the property. For design professionals, certain disclosure practices (like documenting concerns about future conditions and a structures ability to withstand them over the long-term) could help shield them from climate-related liability and pass potential liabilities onto property owners or developers. Standard contract terminology on climate risk should also be discussed.

4. CONVENE A STAKEHOLDER GROUP TO EXPLORE STANDARDS AND CODES FOR CLIMATE-RESILIENT CONSTRUCTION

Standards and codes for construction are an essential and urgent next step to becoming better prepared for climate change. In Massachusetts, there is a need to explore ways to facilitate and require safer, more climate-resilient design and construction. To ensure that changes are both impactful and practical, a diverse stakeholder group that includes representatives from a variety of fields and backgrounds including but not limited to the real estate, business, design, environmental, and regulatory communities should be convened. These stakeholders should form a working group to provide insight on and propose appropriate standards and codes that prepare our development and infrastructure for climate change and protect public health and safety. For example, this group could advise the Board of Building Regulations and Standards (BBRS) on how climate-related public safety issues could be addressed through the state building code. This working group should be convened by the state under the joint leadership of the Executive Office of Energy and Environmental Affairs ("EOEEA") and the Executive Office of Housing and Economic Development ("EOHED") and/or the Executive Office of Public Safety and Security ("EOPSS"). This effort would dovetail with the Commonwealth's ongoing efforts to develop state-wide climate adaptation solutions.

5.CONDUCT RESEARCH ON INCENTIVES AND FUNDING MECHANISMS FOR CLIMATE ADAPTATION

Another key barrier to implementation that was identified by both groups was initial costs. For the design community, it is difficult to promote climate-resilient projects that are more costly than the status quo. For developers, it is frustrating to be asked to go above and beyond the current regulations and standards without incentives. For government entities, it is difficult to move forward with large-scale adaptation projects without adequate or dedicated funding. More research is needed to determine what suite of incentives and funding mechanisms can be employed to complement and reinforce regulatory changes. For example, research on the value capture for climate resilience or options for leveraging private equity to fund climate-resilient infrastructure projects. It is noteworthy that at the time of this writing, the University of Massachusetts ("UMass") Boston is developing a report on climate-related finance and governance.

6. DEVELOP A CLIMATE ADAPTATION PLAYBOOK OF POLICY AND LEGAL TOOLS

Developing a climate adaptation "playbook" that lays out the full suite of legal and policy tools available to government entities to pursue adaptation efforts, including executive orders, legislation, ordinances, request for proposals, zoning codes, and more, could be a useful tool for broadening the base of states and local governments undertaking climate adaptation strategies. While the Georgetown Climate Center

currently hosts an "Adaptation Clearinghouse" website with examples of many of these tools from around the country, officials who do not know what they are looking for could find this resource hard to navigate. The playbook should provide a primer on each of the tools, a brief summary of where they have been used successfully, legal guidance on how to go about implementation, and a few examples of each from different places around the country that could be used as templates. The availability of this playbook could be valuable to government officials who want to take action on climate risks, but fear legal implications of certain strategies.

FINAL THOUGHTS

It is noteworthy that Massachusetts is currently undergoing a massive effort to collect and disseminate uniform climate projection data for the entire state as a part of Governor Baker's Executive Order 569. The availability of this data will be crucial to implementation of climate resilience strategies and serve as an essential foundation to many of the steps outlined above including the development of regulatory changes and climate resilient design standards. The state is also in the process of developing a more comprehensive statewide climate adaptation plan that will be combined with the state's Natural Hazard Mitigation plan prepared for FEMA. Massachusetts will be the first state in the country to take the important step of comprehensively integrating these two plans. While these research and planning efforts are critical, it is time we began implementing the necessary strategies and policies. The next steps outlined above will help move the needle on implementation and complement the ongoing efforts of the Commonwealth as well as the many cities and towns that are focused on this issue.

This workshop summary Report was prepared by Deanna Moran (dmoran@clf.org) and Elena Mihaly (emihaly@clf.org); please use the contact information provided for any questions or comments.

APPENDIX A: Workshop Agendas

Climate Adaptation & Liability Workshop I: Design Professionals

Workshop Agenda – Friday, May 19

Purpose of the workshop: To explore the legal implications of "failing to adapt" to known climate risks and potential obstacles to implementing proactive climate adaptation strategies. We do not expect to come up with solutions over these four hours. Rather, the purpose of these discussions is to determine what the current hurdles to adaptation are and articulate what roles law and policy can play in incentivizing or disincentivizing adoption of climate resilient strategies.

9:00 – 9:10	Welcome/logistics of the day
9:10 – 9:20	Background and Goals of Workshop
9:20 – 9:35	Climate Ready Boston presentation
9:35 – 10:15	*Liability for Failure to Adapt: Climate Change and the Evolving Liability of Design/Build Professionals, Developers, Realtors, and Insurance Agents*
10:15 – 10:30	Break
10:30 – 11:30	Small group discussion 1: Barriers to Climate Adaptation in Practice
11:30 – 12:00	Lunch
12:00 – 12:45	Small group discussion 2: Assessing Professional Risks
12:45 – 1:00	Wrap up and next steps

Climate Adaptation & Liability Workshop II: Government Officials

Workshop Agenda – Thursday, May 25

Purpose of the workshop: To explore the legal implications of "failing to adapt" to known climate risks and potential obstacles to implementing proactive climate adaptation strategies. We do not expect to come up with solutions over these four hours. Rather, the purpose of these discussions is to determine what the current hurdles to adaptation are and articulate what roles law and policy can play in incentivizing or disincentivizing adoption of climate resilient strategies.

9:00 – 9:10	Welcome/logistics of the day
9:10 – 9:20	Background and Goals of Workshop
9:20 – 9:35	Climate Ready Boston presentation
9:35 – 10:15	*Government Action in the Age of Climate Change: Climate Adaptation and Evolving Liability*
10:15 – 10:30	Break
10:30 – 11:30	Small group discussion 1: Barriers to Climate Adaptation in Practice
11:30 – 12:00	Lunch
12:00 – 12:45	Small group discussion 2: Assessing & Maneuvering Obstacles
12:45 – 1:00	Wrap up and next steps

APPENDIX B

Climate Adaptation & Liability Workshop I: Design Professionals

Affiliations of participants

A Better City
Architerra*
Arrowstreet
Arup*
Ames & Gough
Boston Green Ribbon Commission*
Boston Harbor Now*
Boston Planning and Development Agency*
Boston Society of Architects*
BSC Group
Center for Urban Watershed Resilience**
Chester Engineers
City of Boston, Environment Department*
Conservation Law Foundation*
Donovan & Hatem
Fort Point Associates
GEI Consultants
Harvard Graduate School of Design*
Mass Audubon
Mintz Levin
NBBJ
Noble, Wickersham & Heart LLP*
Norris & Norris Associates
Perkins + Will
Reed Hilderbrand LLC
Tetra Tech
The Green Engineer, Inc.
TRC Solutions
UMass Boston
US Army Corp of Engineers
VHB

Climate Adaptation & Liability Workshop II: Government Officials

Affiliations of participants

A Better City
Architerra**
Arup**
Center for Urban Watershed Resilience**
City of Boston, Environment Department*
City of Boston, Inspectional Services
City of Boston, Law Department
City of Cambridge, Community Development Department
City of Somerville, Office of Sustainability and Environment
Conservation Law Foundation*
Boston Green Ribbon Commission*
Boston Harbor Now*
Boston Planning and Development Agency*
Boston Society of Architects*
Noble, Wickersham & Heart LLP*
Office of the Massachusetts State Auditor
FEMA Region I
Fort Point Associates
Harvard Graduate School of Design**
Harvard Law School, Emmett Environmental Law and Policy Clinic
Imagine Boston 2030
Massachusetts Attorney General's Office
Mass Audubon
Massachusetts Bay Transportation Authority
Massachusetts Coastal Zone Management
Massachusetts Department of Conservation & Recreation
Metropolitan Area Planning Council
The Nature Conservancy
Trust for Public Land
Tufts University
US Army Corp of Engineers
US Green Building Council
VHB

* These affiliations were part of CLF's steering committee for organizing these workshops

** In absentia

APPENDIX C: Breakout Session Discussion Topics and Framing Questions

WORKSHOP I: DESIGN PROFESSIONALS

Discussion Topic 1 – Barriers to Climate Adaptation in Practice

- Has there been a time you wanted to design something a certain way (going above and beyond code to address climate vulnerabilities) but there was a barrier that prevented you from doing so? What was the barrier?
- What are the main hurdles to more widespread adoption of climate resilient design? What types of solutions are best oriented to address those obstacles (e.g., market, regulatory, social, communication, etc.)?

Discussion Topic 2 – Assessing Professional Risks

- Is it your professional or legal responsibility to speak out against current codes that may be insufficient?
- If the design team moves forward with creating plans without resiliency measures and "stamps" the plan attesting that it meets local building codes and standards, yet the team believes that the design parameter will not withstand future climate impacts based on current projections, what are the perceived risks?
- If you do go above and beyond current codes to address climate change with on-site measures, are there risks with that as well? Does addressing climate change in a piecemeal way that is not coordinated on a larger city-wide, state-wide, or regional scale have ramification for third parties (e.g., diverting flood waters to other sites because measures weren't coordinated on a larger scale)?

WORKSHOP II: GOVERNMENT OFFICIALS

Discussion Topic 1 – Barriers to Climate Adaptation in Practice

- What were you surprised by (if anything) in this presentation? What would you bring back to your colleagues and why?
- Has there been a time you wanted to implement a climate resilient policy or strategy but there was a barrier that prevented you from doing so? What was the barrier?
- What types of solutions are best oriented to address those obstacles (e.g., market, regulatory, social, communication, etc.)?

Discussion Topic 2 – Assessing Risk & Maneuvering Obstacles

- What are the constituencies that are important to problem-solving these issues and in what way are they encouraging or preventing progress?
- Who should be leading on climate adaptation? Should planning and implementation be driven at the local level or should local governments be looking to regional, state, or federal governmental bodies? What structures, if any, are in place to facilitate this coordination?
- How might existing statutes, regulations, and policies aid or inhibit the implementation of climate resilient policies and strategies (e.g., Chapter 91, MEPA, FEMA, and others)?
- To what extent is the notion of liability a topic that is being discussed by staff in your agency/department?

APPENDIX D: Workshop Surveys

WORKSHOP SURVEY

Climate Adaptation & Liability Workshop I: Design Professionals

Thank you for participating in our workshop. Your experience and insight has been extremely valuable. Please take a few minutes to answer the questions below to help inform materials and next steps!

1. Which of the following categories best describes your professional background?

   ☐ Architect ☐ Engineer ☐ Construction ☐ Real Estate

   ☐ Insurance ☐ Law ☐ Other _____

2. Do you routinely employ a climate expert to guide your decision-making on design and construction of new development/infrastructure?
   ☐ Yes ☐ No

3. Have you ever felt pressured to ignore climate-related issues with a site for fear that there would be negative consequences for you as a professional (e.g., your design team won't be selected for the job, it could impact the financing or insurance of the building, it will make selling the property more difficult, etc.)?
   ☐ Yes ☐ No

4. In your opinion, to move the needle on climate adaptation, should we design our way forward or regulate our way forward?
   ☐ Design ☐ Regulate

5. Has your perception of professional or legal risks as it relates to climate change increased as a result of this workshop?
   ☐ Yes ☐ No

6. Would you recommend this workshop to a colleague?
   ☐ Yes ☐ No

7. In your opinion, what would an appropriate follow-up/next steps to this workshop be?

WORKSHOP SURVEY

Climate Adaptation & Liability Workshop II: Gov't Officials

Thank you for participating in our workshop. Your experience and insight has been extremely valuable. Please take a few minutes to answer the questions below to help inform materials and next steps!

1. Which of the following levels of government best describes your current employment:

   ☐ City or Town ☐ State ☐ Federal ☐ NGO ☐ Other _____

2. Do you routinely consult the best available climate science on future impacts and conditions when you make decisions about development/infrastructure?
   ☐ Yes ☐ No

3. Has the fear or threat of litigation either (1) prevented you from implementing a climate resilient strategy or policy or (2) caused you to alter/dilute your original vision for a climate resilient strategy or policy?

   ☐ Yes, the first ☐ Yes, the second ☐ Yes, both ☐ No, neither

4. In your opinion, to move the needle on climate adaptation, should we design our way forward or regulate our way forward?
   ☐ Design ☐ Regulate

5. Has your perception of professional or legal risks as it relates to climate change increased as a result of this workshop?
   ☐ Yes ☐ No

6. Would you recommend this workshop to a colleague?
   ☐ Yes ☐ No

7. In your opinion, what would an appropriate follow-up/next steps to this workshop be?

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