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Climate Change: Implications for Commercial Real Estate Clients (and Their Attorneys): Legal Update, The ACREL Papers – Fall 2014 (American College of Real Estate Lawyers / ALI-CLE)

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CLIMATE CHANGE: IMPLICATIONS FOR COMMERCIAL REAL ESTATE CLIENTS (AND THEIR ATTORNEYS): LEGAL UPDATE*

Celeste M. Hammond**

I. Climate Change Is Real And Negatively Affecting Commercial Real Estate [1] And The Built Environment

A. Climate change is real and is changing the way we live and practice law

Scientists are clear and nearly unanimous in their conclusions that the increased use of energy by humans with associated increased CO2 emissions have produced climate changes that negatively impact the planet and those living on it.[2] According to Thomas F. Stocker, co-chairman of the Intergovernmental Panel on Climate Change (IPCC), which is a UN sponsored group of scientists that issued a report that establishes an upper limit on greenhouse gases to limit (but no longer to avoid) irreversible climate change, "[c]limate change is the greatest challenge of our time." [3]

William Nordhaus, an economist who studied climate change for over 30 years, is among a growing group of non-scientists who point to the human activities that cause climate change as the place where any slowing of it and the response to it (adaptation) must begin. In his recent book,[4] he emphasizes the rules of economics and politics and law which must change to deal with this serious global threat. This is not a problem that scientists can find the right remedies to fix. Indeed, as scientists become more unified in their conclusions, there is more political and social resistance to the notion that climate change exists, much less acceptance of any proposals to adapt to it.

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[1] *See generally*, Kratovil Conference at John Marshall Law School, "Adaptation of the Built Environment to Achieve Resilience to Climate Change," September 26, 2013, jmls.edu/real-estate/2013-kratovil/general.html.

[2] *See, e.g.,* U.S. Global Change Research Program, Global Climate Change Impacts In The United States 9 (2009) [hereinafter Global Change Report], *available at http://downloads.globalchange.gov/usimpacts/pdfs/climate-impactsreport*. (indicating that the warming of the climate is "unequivocal" and is "due primarily to human induced emissions of heat trapping gases.").

[3] Celeste Hammond, *The Evolving Role for Transactional Attorneys Responding to Client Needs in Adapting to Climate Change*,47 J. Marshall L. Rev. 543,249 (2014).

See generally, William Nordhaus, THE CLIMATE CASINO-Risk, Uncertainty and ECONOMICS FOR A WARMING WORLD, (2013).

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Nordhaus uses the metaphor of a climate casino that we are now entering and rolling dice. He concludes that economic growth itself globally as well as nationally is producing climate change and its negative consequences.[5] Roger A. Pielke, Jr., a political scientist in the Center for Science and Technology Policy Research at the University of Colorado, Boulder, blames "population growth in exposed locations, increasing wealth at a risk of loss, and policies that lead to increased vulnerabilities."[6] He stresses the importance of adaptation to climate change to the real estate industry, because, "what we build, how we build and where we build" [4] are important in dealing with the disastrous impact of climate change.

B. Identified risks of climate change affecting real estate

Scientists[5], real estate professionals, [9] the legal community [6] and journalists in newspapers[7] and magazines[8] have widely discussed a variety of detrimental risks caused by climate change. It is a "hot" topic for property law professors as well as real estate lawyers[9]. There are four principal risks that have been identified.

Water scarcity and drought produce the sand storms that occur with greater regularity in the southwestern part of the U.S. Drought occurs when farmers and other people and companies are using more water than precipitation supplies. The negative effect on the economies of rural and urban communities occurs as the energy industry, among others, competes with farming for the scarce water.[14]

Rising temperatures are the most measurable effect of climate change. Justin Gillis of the New York Times is one of many journalists reporting the link between rising temperatures and other disasters, including changes in growing seasons and the insects that destroy crops and bring disease.[10] Rising temperatures cause glaciers to retreat rapidly, permafrost to thaw, ice-free

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[4] *Id*.

[5] *See, e.g.,* Thomas F. Stocker et al., *Climate Change 2013 The Physical Science Basis*, CAMBRIDGE UNIVERSITY PRESS (2013), *available at* http://www.climatechange2013.org/images/report/WG1AR5_Frontmatter_FINAL.pdf [9] *See, e.g.*, Valerie Seidel, Hunter Richards, Owen Beitsch, *Evaluating Coastal Real Estate Value vs. Risk in the Wake of Sea Level Rise*, REAL ESTATE ISSUES, Vol. 38, p. 16 (Number 3, 2013) (discussing appraisal approach to balancing value of coastal economic development with increased costs of adaptation and repairs).

[6] *See, e.g.*, Vicki Arroyo and Terri Cruce, *State and Local Adaption, in* THE LAW OF ADAPTATION TO CLIMATE CHANGE: U.S. ANDINTERNATIONAL ASPECTS 569-600 (Michael B. Gerrard and Katrina F. Kuh eds., Chicago:
American Bar Association 2012)

[7] *See, e.g.*, Justin Gillis, *In New Jersey Pines, Trouble Arrives on Six Legs*, N.Y. TIMES, Dec. 1, 2013 at A.1. (tracing the link between rising temperatures and other disaster impacts of climate change.)

[8] *See, e.g.*, Shasha Abramsky, *Dust Bowl Blues-A Severe Drought in the Southwest is Devastating Crops and Farm Communities-and sending a warning about Climate Change*, THE NATION, Aug. 5-12, 2013, at 14.

[9] *See generally*, supra, note 10.] [14] Sasha
Abramsky, *supra*, note 12, at 18.

[10] *See, e.g.*, Justin Gillis, *supra*, note 11.

seasons in the oceans, lakes and rivers to lengthen, and snow to melt earlier than in the past. [11] Midwest and Northern Great Plains temperatures especially are rising faster in winter than in other

[5] *Id.* at 15.

[6] Roger A. Pielke, Jr., *Weather-Related Losses in the Built Environment: Societal Change and Climate Change,* 33 REAL ESTATE ISSUES 9,11 (2008).

seasons and are expected to rise at least seven degrees Fahrenheit over the next twenty years.[17] Flooding from increased precipitation occurring in some areas contrasts with the drought occurring in other areas. This inconsistency and uncertainty of the impact of climate change is one of the challenges of adaptation to climate change. [18]

Prolonged drought, high temperatures, high winds and a supply of vegetation for fuel increases the risk of wildfires.[12] The historic response of suppressing wildfires was to protect new development. The policy of both the National Park Service and the United States Forest Service shifted in 1950 to allow some uncontrolled burning as a form of adaptation but this met with political opposition. And, even in changing this policy, these federal agencies did not deal with the impact of increased amounts of fuel in unburned vegetation. The result is increased wild fire severity and increased wildfires near at-risk land-urban interface zones.[13]

Sea level rise (SLR) and rising lake and river levels are threats of climate change that require the attention of the real estate industry, because 50% of the population in the United States lives within fifty miles of a coast and that number is increasing. [14] In addition to damage as rising water spills onto the shore over time, even a relatively mild storm can cause enormous damage to coastal communities. The resulting effect on habitability and even basic access due to damage to the infrastructure (roads, public safety services, communication facilities) can mean a reduction in fair market value. [15] Coastal communities need to balance the costs of repeated repairs with the value of economic development as SLR progresses. Even those properties that are not directly along the coast may be affected. [16]

This means that governments must stop promoting development on the coasts as a source of economic growth. The reality is that increased development results in increased costs to adapt the built environment. Anne Siders describes the need for actual retreat in her recent handbook.[17]

[11] Celeste Hammond, *supra*, note 3 at 551.

[12] Robert B. Keiter, *Wildfire Policy, Climate Change, and the Law,* 1 TEX. WESLEYAN J. REAL PROP. L. 50 (2012) (discussing causes, seriousness, and relationship between climate change and wildfires).

[13] Celeste Hammond, supra, note 3, at 552.

[14] *See* Celeste Hammond, *supra*, note 3, at 553-554.

[15] John R. Nolan, "*The Land Use Climate Change Climate Bubble – Second Installment: Backyard Bubbles,*" Green Law Blog, Pace Law School, (noting that real estate values are beginning to fall due to the real and perceived effects of climate change on land use) *available at* file:///C:/Users/7hammond/Documents/ACREL%20CC%20article/Clilmate%20change%20bubble%20%20%20NY%20Times%20revie%20Paulson%20June%2... (last visited June 23, 2014).

[16] Seidel, Richards, Beitsch, *supra*, note 9 at 16.

[17] *See generally*, Anne Siders, Managed Coastal Retreat – A Legal Handbook on Shifting Development Away from Vulnerable Areas, (Michael B. Gerrard ed., Colum. Ctr. For Climate Change, Colum. L. Sch. 2013), *available at*

This article will focus on sea level rise and coastal flooding as its main example of the threat of climate change to the built environment.[18]

[17] *Id.*

[18] *See* Celeste Hammond, *supra*, note 3.

II. Adaptation, Not Mitigation, Is Increasingly Accepted[19] as The Proper Focus When Dealing With Negative Impacts Of Climate Change

A. Mitigation

The word "mitigation" refers to the options for limiting climate change principally by reducing emissions that trap heat and cause temperatures to rise.[27] Actually, the primary source of energy has always been and continues to be carbon based. It is all use by humans and thus is labelled "anthropogenic." A review of the world's primary energy use since 1850 shows increasing use of coal, oil and gas through 2008 and very little use of renewables such as nuclear, hydropower, wind energy and solar.[20] Even as the inventions and technology developed -from the steam engine to the electric motor to the gasoline engine to aviation to www.internet.com-, the demand for additional energy continues.

The recent emphasis on sustainability and GREEN (a term of branding for sustainability and mitigation of climate change) as witnessed in the Center for Real Estate Law at the John Marshall Law School, for example, reflects the hope and expectation that mitigation would prevent climate change at a level to prevent the atmospheric and economic results with which we are now dealing. [21] Goals of the U.S. Green Building Council (USGBC) to certify buildings at varying levels for five different types of building projects [22]and to accredit those professionals, including increasing numbers of lawyers, as LEED [23] are to save energy costs and to reduce carbon use. Law practice oriented devices such as green leases all are aimed at prevention. The heart of sustainability is the

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2349461 (arguing that policies should discourage living near coasts).

[18] *See* Celeste Hammond, *supra*, note 3 at 554. (illustrating how some commenters include a longer list of impacts of climate change: extreme weather events [hurricanes, tornadoes, heavy precipitation]; threats to ecosystems and biodiversity; decreased agricultural productivity and reduced food security; energy scarcity; transportation risks and threats to human health)

[19] Katharine A. Trisolini, *Holistic Climate Change Governance: Towards Mitigation and Adaptation Synthesis*, 85 U OF COLO L. REV. 615 (Forthcoming 2014) (suggesting that a hybrid between mitigation and adaptation is more appropriate than adaptation alone). [27] Celeste Hammond, *supra*, note 3 at 554.

[20] Rembrandt Koppelaar, *Rembrandt Koppelaar on World Energy Consumption 1830-2010*, available at Rembrandt Koppelaar on World Energy Consumption 1830-2010.

[21] *See* John Marshall Law School Center for Real Estate Law, www.jmls.edu/realestate (last visited Jun. 23, 2014) (discussing lists of courses, CLE programs relevant to sustainability and a certificate program in sustainability available to J.D. students).

[22] LEED refers to Leadership in Energy & Environmental Design and is a green building certification program that recognizes green building strategies and practices. United States Green Building Council, http://www.usgbc.org/leed(last visited June 30, 2014).

[23] Additional information about accreditation of professionals is available at http://www.usgbc.org/articles/interestedin-becoming-leed-green-associate-or-leed-ap-what-you-need -to-know.

economic goal of reducing energy costs, rather than use of reduced emission based sources. Indeed, some common mitigation strategies could have maladaptive consequences by increasing greenhouse gas emissions. For example, smart growth to reduce driving of cars could increase urban heat and thereby increase use of air conditioning. Increasing availability of air conditioning could increase greenhouse emissions from production of the energy to run the air conditioning equipment.

Sustainability and mitigation when applied to real estate transactions are concerned with saving energy costs rather than on what happens to the bricks and sticks as the result of weather events and climate change.

Whether real estate lawyers advise developers, lenders, investors, owners of buildings or the government itself, they will need to appreciate the distinction between mitigation which like environmental law has a certain "stationarity"[24] to it and adaptation. The stationarity which has suited environmental law fairly well will be inapplicable to climate change because the future will have no comparison with the past. Jessica Owley argues that when we set static rules regarding the land (e.g. our policy of land conservation focuses primarily on creating park-like areas where development is not permitted), we have failed to set in place mechanisms to re-examine those rules or management strategies in the future.[25]

Environmental law is static and focuses on fixed points that will not meet the requirements of adaptation to climate change with its uncertainty as to when and how climate change will impact our daily lives. [26] Resilience requires continual efforts at assessing the system and response to changes which are not static. Adaptation responds to the uncertainty associated with climate change and requires nimbleness of a sort with which most are not familiar. It is not that sustainability is always bad, it is that sustainability is too late to respond to current threats/impacts of climate change. "It is too late to avoid the impact of climate change on resilience of the built environment, both privately owned structures and publicly owned infrastructure."[27] The fact is that we may only be able to adapt if the planet is to remain resilient.

B. Adaptation

"Adaptation" is the new word to be defined. It is more complicated and less clear than sustainability or mitigation. It "refers to changes made to better respond to present or future

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[24] P.C.D. Milly et al., *Stationary is Dead: Whither Water Management?*, 319 SCIENCE 573 (2008); (stationary is the "idea that natural systems fluctuate within an unchanging envelope of variability.").

[25] *See* Jessica Owley, *Rethinking Sustainable Development to Meet the Climate Change Challenge: Adaptive Management, Resiliency, and Why Sustainability Discussions Give Me a Headache*, 43 Envtl. L. Rep. 10349 (2013) *available at http://ssrn.com/abstract=2189530*.

[26] *Id.* (Discussing the static nature of environmental law which will not serve adaptation law well).

[27] Celeste Hammond, *supra*, note 3 at 560; see also, Victor B. Flatt & Yee Huang, *Climate Change Adaptation: The Impact of Law on Adaptation in the Private Sector*, 2 (Center for Progressive Reform Briefing Paper No. 1209, July 2012) *available at* http://www.progressivereform.org/articles/Adaptation_Private_Sector_1209.pdf.

climate and other environmental conditions, thereby reducing harm or taking advantage of opportunity." [28] The IPCC defines adaptation as "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." [29] The U.S. Global Change Research Project provides another definition: "measures to improve our ability to cope with or avoid harmful impacts and take advantage of beneficial ones, now and in the future." [38] Very recently the hope that there might be benefits from climate change[30] such as longer growing seasons for crops, are being dispelled in light of newly

recognized effects of climate change like hurricanes, droughts and floods. [31] Justin Gillis reports studies showing that rising temperatures will make it harder for crops to thrive.[32]

1. There are three generally recognized modes of adaptation to climate change[33]

The first method of adaptation is to defend in place against the impacts of the climate change. Construction of a sea wall to protect the built environment along the coast of an ocean from risk of flooding, erosion or inundation by water of adjacent land and of structures would be in this category. Some are "soft" approaches like development of the shoring line by growing plants, making marshes and supporting aquatic plants. A seawall built from concrete would be known as a "hard" or "armor" approach. This approach is also labelled "protection", because it seeks to exclude the hazard. [43] Second, accommodation to the impact of climate change refers to ways humans learn to live with the changes – excessive heat, drought, increased flooding for example. Accommodation to these would include passive cooling technologies in the desert to make outdoor activities bearable. The third mode is retreat. It mandates migration of people, communities and their supportive systems. This is the most extreme method of adaptation and also the one that triggers the most political response. At its extreme, it may mean not only prohibiting new development but actually forever leaving behind what has been developed and destroyed!

[28] Robert B. Keiter, *Wildfire Policy, Climate Change, and the Law, 1 Texas Wes. J. Real Prop. 500-512* . 500, 512 (2012).

[29] Intergovernmental Panel on Climate Change, *Introduction* to Climate Change 2007: Impacts, Adaptation and Vulnerability, 1, 6 (M.L. Parry et al. eds., 2007), *available at* http://www.ipcc-wg2.gov/AR4/website/intro.pdf. [38] Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson , , *Global Climate Change Impacts In The United States,* 11 U.S. GLOBAL CHANGE RESEARCH PROGRAM (2009). [hereinafter USGCRB, Impacts in the United States].

[30] *See generally*, Hammond *supra*, note 3 at 571-573.

[31] Robert R. M. Verchick, *What Lawyers Should Know about Adapting to Climate Change 5* (September 6, 2013) (American Bar Association course materials for Conference on Questions for Architects) *available at* http://www.americanbar.org/content/dam/aba/events/international_law/2013/08/section-of-international-law-at-theaba-s-2013-annual-meeting/090-Verchick-Robert-paper.authcheckdam.pdf .

[32] Justin Gillis, *Climate Change Seen Posing Risk to Food Supplies,* N.Y. TIMES, Nov. 1, 2013.

[33] *See generally*, Hammond, *supra*, note 3 at 560-565; *see also* Seidel, Richards, Beitsch, *supra*, note 9 at 17-18. (calling these three modes "protection, accommodation and planned retreat"). [43]
Seidel, Richards, Beitsch, *supra*, note 9 at 18.

The communication of information to the general public, and to real estate attorneys in particular, about the facts of climate change and awareness of its catastrophic impacts is needed to gain the critical support for taking on adaptation methods and for adapting the legal response to climate change. [34] In a maxi view of these methods, Neil Adger and others, include efforts "to build adaptive capacity and action that implements operational adaptation decisions." They conclude that "[a]ctions associated with building adaptive capacity may include communicating climate change information, building awareness of potential impacts, maintaining well-being, protecting property or land, maintaining economic growth, or exploiting new opportunities."[35]

2. Adaptation to Sea Level Rise (SLR)reflects all three possible modes of adaptation

Valerie Seidel and others discuss the three modes of adaptation in the context of SLR from their perspectives as real estate research/economic consultants [36] They consider three general options for coastal threats from SLR. "[P]rotection seeks to exclude the hazard; accommodation allows human activities and the hazard to coexist, while planned retreat removes human activity from the hazardous zone." [37] Defending in place includes construction of structures like dikes, dams, sea walls and the sand dune in the *Borough of Cedar Harvey v. Karan* case. Accommodation to the impacts due to climate change includes changing the function of the built environment along the coast with new designs like hurricane-proof roofs and elevated structures. Beach re-nourishment (replacing sand that has been lost to erosion or submersion as a result of SLR) maintains the status quo but is very expensive and must be repeated regularly.[38] It includes coastal land use controls

[34] Hammond, *supra*, note *3* at 561.

[35] Neil Adger et al., *Successful Adaptation to Climate Change Across Scales*, 15 Global Envtl. Change 77, 79 (2005) *available at* http://scholar.google.com/citations?view_op=view_citation&hl=en&user=Adshs2wAAAAJ&citation_for_view=Adshs2wAAAAJ:edDO8Oi4QzsC.

[36] Seidel, Richards, Beitsch, , *supra*, note 9 at17-18. .

[37] *Id.* (quoting study by James E. Neumann, Gary Yohe, Robert Nicholls and Michelle Manion, *Sea Level Rise and Global Climate Change: A Review of Impacts to U.S. Coasts,* PEW CENTER ON GLOBAL CLILMATE CHANGE, 2000).

[38] *See* Sorrell E. Negro, *Preparing, Adapting, and Re building Rising Sea Levels Raise New Legal Issues*, 27 PROBATE & PROPERTY 55, 56 November/December 2013 (providing examples of the costs to beach towns along the Atlantic Ocean).

and regulations. Because of political reality it is important to consider all three forms of adaptation to SLR even though retreat may ultimately be the only viable adaptation.[39]

Accommodation also necessitates dealing with the damage done to coastal infrastructure and other structures in densely populated areas. Actual relocation of structures and amenities and re-routing traffic will be required if humans are to continue to coexist with the hazards. [50] Retreat as an adaptation to climate change involves requiring and mandating migration of people, communities, and their supportive systems away from the coasts. It is considered to be the most extreme mode of adaptation because of the high emotional response and thus politicization of considering it and committing to it. Australia has witnessed this phenomena, the "retreat from retreat," as public policy responding to SLR has evolved recently with the election of a more ideologically conservative government.[40] It includes both prohibiting new development and abandoning forever the area threatened or destroyed by SLR. [41]

Nevertheless, even the proposals for 'managed retreat' developed by Anne Siders in *Managed Coast Retreat: A Legal Handbook on Shifting Development Away from Vulnerable Areas* [42] may not be sufficient over the long run to avoid total retreat in some areas affected by SLR. Managed

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retreat includes the eventual result of Biggert Waters Flood Insurance Reform Act of 2012. [See Part IV *infra]*

Now, legal scholars urge that both mitigation and adaptation policies must develop alongside one another. Katherine A. Trisolini explores this approach in the context of a case study of nuclear power.[43]

III. Two Examples Introduce The Complexities Adaptation To Climate Change Presents To The Legal System In The US.

A. The first example of adaptation

The first example involves defending in place by erecting a sand dune to keep SLR and flooding away from the built environment along the coast. *Borough of Harvey Cedars v. Karan,*[55] an

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[39] Marc R. Poirier, *Problems of Perilous Property: The Right to Exclude, Sea Level Rise, and Saving the Beach Community from Itself in* Borough of Harvey Cedars v. Karan 1-2 (2014) (TO COME).(posing the threshold question of whether retreat would be preferable to defense and accommodation in the long run)' email Marc.Poirier@shu.edu.
[50] Seidel, Richards, Beitsch, *supra*, mote 9 at 18.
[40] Justine Bell, M. Baker-Jones, *Retreat from Retreat-The Backward Evolution of Sea-Level Rise Policy in Australia, and the Implications for Local Government,* 19 LOCAL GOVERNMENT LAW JOURNAL 23 (2014) *available at* http://ssrn.com/abstract=2414237.
[41] Hammond, *supra*, at 562.
[42] *See generally,* Anne Siders, supra, note 24.
[43] Trisolini, *supra*, note 26. [55]
214 N.J. 384 (2013)

opinion of the Supreme Court of New Jersey, raises the issue of who will pay when government prescribes adaptation by land use regulation or outright condemnation. The government was condemning an easement over land near the coast to erect a sand dune to protect both the owner of the land underlying the easement as well as neighbors owning land along the coast and on higher elevations above the coast. The legal issue is one involving partial taking leaving the rest of the fee in the ownership of the landowner. The narrow issue in the case is whether a determination of "just compensation" as required by the U.S. and New Jersey Constitutions for the taking should include evidence of the benefit enjoyed by the landowner because of the dune that is to be built atop the easement – a "reasonably ascertainable benefit." By deciding that the reduction in fair market value of the underlying land caused by the easement should add in any benefit created by that easement as the basis for just compensation, *the Cedars* court discourages holdouts who challenge this mode of adaptation.

1. A primer on eminent domain and takings law under 5th Amendment to US Constitution The Fifth Amendment to the United States Constitution guarantees that in no case will "private property be taken for public use, without just compensation."[44] The first type of eminent domain action involves the actual physical taking of land by the government for a public purpose and is referred to as a physical taking.[45] With a physical private land taking, the government actually takes ownership of the land.[46] Any physical taking by the government requires three things (i) private land; (ii) a legitimate public purpose for taking the land; and (iii) just compensation paid to the landowner.[47] The second type of taking is called a regulatory taking. A regulatory taking is regulation of land by the government that goes too far.[48] A regulatory taking occurs when the government regulates property to such an extent that it denies the landowner "*all* economically

viable use" of the land.[49] As a result, an individual whose land is regulated but not taken will only be entitled to just compensation if the landowner can establish that the use of the land has been regulated to such an extent that all economically viable use of the land has been denied.[62]

a. Physical takings

In order for the government to physically take land, the taking must be rationally related to a legitimate public purpose.[50] The legislative concept of public purposes is not conclusive.[51] For example, in *Kelo v. City of New London, Connecticut*, a private developer attempted to purchase

[44] *U.S. Const. Amend*. V.
[45] *Lucas v. S. Carolina Coastal Council, 505 U.S. 1003, 1015 (U.S.S.C. 1992).*
[46] *Id*.
[47] *Kelo v. City of New London, Conn.*, 545 U.S. 469, 477 (2005).
[48] *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 414 (1922).
[49] *Lucas, 505 U.S.* 1015.
[62] *Id*. at 1018-19.
[50] *Kelo, 545 U.S. at 490.*
[51] *See Hawaii Hous. Auth. v. Midkiff*, 467 U.S. 229, 239 (1984).

several tracts of residential land in New London to build a proposed private facility.[52] When several homeowners refused to sell their land to the developer, the City of New London exercised a physical taking of these tracts of land.[66] The Supreme Court in *Kelo* explained that the City of New London's purpose was sorely needed economic development and as a result it could transfer property from one private party to another as long as just compensation was paid.[53] However, the Supreme Court articulated that New London could have also transferred property from one private party to another even if the only purpose was merely to provide the public with a future use of the property as long as just compensation was paid to the private owner.[54]

b. Regulatory takings

The second type of taking occurs when a statute or ordinance interferes with the owner's "reasonable investment backed expectations" of its property.[55] There is no set formula for assessing the extent of interference a regulation has on a particular parcel of land as the inquiry is fact dependent.[56] However, Courts have created limitations on the obligation of the government to compensate for losses due to regulations. Both of these limitations are relevant to adaptation to climate change. One limitation offsetting government owed compensation concerns property that is restricted by preexisting conditions or "background principles" that are inherent to the property.[57] Another such limitation principle concerns average reciprocity of advantage. Average reciprocity of advantage contemplates that when restrictions or regulations are imposed on all property owners in a designated area any such decrease in value will at least be partially offset by an increase in value which flows from similar restrictions as to use on neighboring properties within the designated area.[58] Essentially, the burden and the benefit offset each other making just compensation nominal or unnecessary for a taking that both damages and benefits a certain group of land owners.

c. Determining "just compensation"

The government's regulatory authority to take property is dependent upon its paying of just compensation to the owner in accordance with the Fifth and Fourteenth Amendments to the Constitution.[59] In determining just compensation for a government taking of private land, the individual benefits and damages associated with the parcel of land must be assessed. Typically, a landowner is entitled to just compensation measured by "the fair market value of the property as

[52] *Kelo*, 545 U.S. at 474. [66]
Kelo, 545 U.S. at 475.
[53] *Kelo*, 545 U.S. at 477-80.
[54] Kelo, 545 U.S. at 488-90.
[55] *Lucas*, *505 U.S.* at 1015-19.
[56] *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 414 (1922).
[57] *Lucas*, 505 U.S. at 1019-28; *See* Marc R. Poirier, *supra*, note 50.
[58] *Borough of Harvey Cedars v. Karan*, 214 N.J. 384, 389 (2013).
[59] *Penn Cent Transp. Co. v New York City*, 438 US 104(1978).

of the date of the taking, determined by what a willing buyer and a willing seller would agree to, neither being under any compulsion to act.[60] For takings involving improvements to real property compensation is to be measured by the value of the land, together with the improvements and fixtures, taken as a whole.[61] Conversely, damage to a vacant parcel as a result of a taking is determined by establishing the difference between the fair market value of the land prior to the condemnation and the later value as affected by the taking offset by any subsequent improvements or special benefits.[6263]

The question of how to determine or measure what constitutes fair market value is, then, the critical question. Much has been written about what is the proper "fraction." The maximum value assigned to diminution of property value would be the result of the simple fraction: the value (relatively low) of the property given all of the challenged land use regulations on its use as compared to the value of the property without any such restrictions. For example: if a property (Grand Central station) is only ten stories tall and it cannot be further developed to the same height and bulk as its neighbors (*e.g.*, 60 stores tall) then the arithmetic would be: value of 10 stories commercial space verses the value of 60 stories of commercial space. This diminution in value = 60-10 = 50 and 50 divided by 60 is diminution of 83.33 % (which would then be converted to dollars to get fair market value. But the Penn Central court itself says " no you don't use 60 stories as the denominator" for two reasons: (1) 60 stories is above and beyond "reasonable investment backed expectations and (2) the value of the existing 10 stories is enhanced precisely because of the land use regulation challenged (a historic preservation ordinance that protected Grand Central Station), insured that it was valuable as a tourist destination to tenants so that Grand Central could charge higher rental rates (plus more people would use Penn Central's trains to get there). Likewise, if you cannot use your single family home to build a parking garage (or any other "junk" use), your property may be worth less than if you could build it but your property as a residential property has a higher market value precisely because the land use regulations keep the area attractive (not junk).

A recent example of assessing fair market value can be found in *Borough of Harvey Cedars v. Karan*.[77] The Karans owned a beachfront home which had a panoramic view of the ocean. The Borough of Harvey Cedars wanted an easement over more than one quarter of the Karans' property in order to build a storm protection dune which would obstruct the Karans' view. When the Karans would not voluntary grant the Borough of Harvey the easement, the Borough brought a condemnation action to condemn the partial portion of the Karans' property. The court discussed

that in calculating just compensation owed for a partial taking, "just compensation to the owner must be based on a consideration of all relevant, reasonably calculable, and non-conjectural factors that either decrease or increase the value of the remaining property."[64] The court further articulated

[60] *U.S. v. Miller*, 317 U.S. 369, 374 (1943).
[61] *Chi. Land Clearance Com. v Darrow*, 12 Ill 2d 365 (1957).
[62] *See Borough*, 214 N.J. *at* 384; *See also* Allison Dunham, *Nichols', the Law of Eminent Domain, Third Edition. by Julius L. Sackman, and Russel D. Van Brunt 1950 Matthew Bender & Co. (1950) Volumes 3*, 60 Yale L.J. 749 (1951).
[63] N.J. 384 (2013).
[64] *Karan*, 214 N.J. at 389.

that the homeowners were entitled to the fair market value of their loss, not a windfall, or a pay out that disregards the home's enhanced value resulting from a public project.[65] Ultimately, the court held that just compensation was required to include the benefit that homeowners gained as a result of the storm protection provided by the dune.

2. Systemic challenges of eminent domain doctrine in adaptation to climate change

Much of the law using the power of eminent domain is state, rather than federal, law. This is important because there is more variety in the law as a consequence and less uniformity/consistency.

Court-made law is slow moving for such a looming threat. For example, even a decision like *Borough of Harvey Cedars v. Karan* which supports adaptation reflects a piecemeal approach and supports inefficient multiple proceedings. Marc Poirier doubts whether this is workable since even the same evidence is likely to be evaluated differently by different commissions and fact finders at trial. [66] He suggests involving a regional body, possibly a coastal commission to remedy this systemic problem of using eminent domain. [67]

Often, legislatures do not even appreciate the impacts of adaptation legislation. These bodies and their members lack understanding of the basic science, of the severity of the threats of climate change and of the need to lift this issue above the typical political fray. The recent amendments to the Federal flood plain legislation, enacted within days of the effective date, reflect the force of lobbying the legislature. Although few expect a distinct body of law like environmental laws 40 years ago to develop, [68] the certainty, clarity and uniformity needed in the development of adaptation law are lacking because of the piecemeal approach. The legal response will be at all levels of government including local,[69]state [70] and federal. [71]. Yet although the scientists articulate

[65] *Id.*

[66] Marc Poirier, *supra* note 50 at 8-9 (discussing the unfairness of the likely variation in the risk assessment in the individual benefit offset determinations).

[67] *See*, Poirier *supra*, note 50 at 3 (suggesting a new concept – perilous property – as a better analytical basis for adaptation to climate change).

[68] Hammond, *supra*, note 3 at 574-579 (discussing the emerging law that is likely).

[69] *See generally* Sean B. Hecht, *Local Governments Feel the Heat: Principles for Local Government Adaptation to the Impacts of Climate Change,* 47 J. Marshall. L. Rev.635(2014) (discussing local efforts at adaptation to climate change).

[70] *See generally* Hammond, *supra*, note 3 at 142 (discussing the layer of state government action in adaptation to climate change).

[71] *See generally* Alice Kaswan, *Climate Change Adaptation and Land Use: Exploring the Federal Role,* 47 J. Marshall L. Rev. 509(2014) (recognizing the need for a uniform policy especially because so many different legal domains, including disaster law, water law, environmental law, natural resources law, agricultural law, housing law and land use law will be implicated in adaptation) [symposium issue]

barriers, [72] those in other professions may be unaware of the barriers to adaptation to climate change in their own fields.

The costs of mitigation and adaptation are huge. [87]The question of who will pay for adaptation arguably is the most important question in the end.[73] Especially because it appears that there will be a succession of government takings, including partial ones, over a time line, the costs incurred for taking the easement for a sand dune today as in *Borough of Harvey Cedars* will not reflect the ultimate costs incurred by government. How long will beach replenishment (a form of accommodation to SLR) and rolling easements (probably part of a managed retreat adaptation to SLR)[74] be sufficient? Will it mean that all of the costs at the various stages of adaptation will be paid by the taxpayer as government condemns outright and risks findings of takings for new regulations?

B. The second example of adaptation

The second example of adaptation to SLR as part of climate change is the recent Federal Flood Plain legislation. It reflects public policy issues that need to be considered as threats and damages of climate change increase. In comparison with the *Borough of Harvey Cedars v. Karan* case which involved accommodation, the federal Flood Plain program may be more a managed retreat. To understand what the current state of the law is, a brief history of the federal legislation will be useful.

1. History of the National Flood Insurance Program

a. Federal flood relief before 1968

In 1968 the U.S. Congress passed the National Flood Insurance Act in 1968 which established the National Flood Insurance Program (NFIP)."[75] Prior to 1968, Federal involvement related to funding structural flood-control projects, such as dams and levees.[91] Furthermore, the only financial remedy available for flood victims was in the form of disaster assistance.[76] The losses of life and property and the amount of assistance paid to disaster victims from floods continued to

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[72] Rosina Bierbaum et al. Arthur Lee, Joel Smith, *Chapter 288-Adaptation, Draft for Public Comment,* at 1004 (Jan. 11, 2013)(outlining those barriers to include "difficulty in using climate change projections for decision-making; lack of resources to being and sustain adaptation efforts; fragmentation of decision-making; institutional constraints; lack of leadership and divergent risk perceptions/cultures and values") [87] *See* Seidel, Richards, Beitsch, *supra*, note 9 at 17 – 18.

[73] *See* Hammond, *supra*, note 3 at 565-571 (discussion of economic costs of adaptation and resources).

[74] James G. Titus, *Rolling Easements,* EPA (2011) (providing a comprehensive look at rolling easements as an adaptive measure) *available at* water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf

[75] National Flood Insurance Act of 1968, Pub. L. No. 90-448, (codified as amended at 42 U.S.C. §§ 4001-4128 (1982 & Supp. I 1983); *see also*, FEMA, *National Flood Insurance Program-Program Description,* i (Aug.1, 2002).

[91] FEMA, *National Flood Insurance Program-Program Description,* 1 (Aug.1, 2002) (noting that these Federal actions occurred with the passage of the Flood Control Act of 1936).

[76] *Id.*

increase, even though the Federal government spent billions of dollars for structural flood-control projects.[77]

During the 1950's, Congress enacted the Federal Insurance Act of 1956, which proposed an experimental program to show whether the private sector could provide flood insurance.[94] This Act was ultimately never implemented, because it soon became evident that "private insurance companies could not profitably provide such coverage at an affordable price, primarily because of the catastrophic nature of flooding and the inability to develop an actuarial rate structure which could adequately reflect the risk to which flood-prone properties are exposed."[95]

By the 1960's, the Federal government took notice of the increasing flood losses and disaster relief costs.[96] The Federal government took major steps to define the Federal policy and approaches to flood control. One of these major steps involved the Southeast Hurricane Disaster Relief Act in 1965, which provided financial relief to flooding victims.[97] A year later, the Bureau of the Budget Task Force on Federal Flood Control proposed House Document 465, "A Unified National Program for Managing Flood Losses" which advocated "a broader perspective on flood control within the context of floodplain development."[78] House Document 465 was the basis for the National Flood Insurance Act of 1968.[99]

b. The 1968 National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) "makes affordable insurance available to *individuals and businesses* in flood hazard areas" and "the program requires participating local governments to regulate future development of their high-hazard areas in order to reduce future damages when the waters next rise."[79] Congress designed NFIP to benefit the *modest landowner and small businessman*.[80] The main goals of NFIP are to "better indemnify individuals for flood losses through insurance; reduce future flood damages through State and community floodplain

[77] *Id.*

[78] *Id.* House Document 465 proposed five goals: "(1) Improve basic knowledge about flood hazards; (2) Coordinate and plan new developments in the floodplain; (3) Provide technical services;(4) Move toward a practical national program of flood insurance; and (5) Adjust Federal flood control policy to sound criteria and changing needs." *Id.* [99] *Id.*

[79] Oliver A. Houck, *Rising Water: The National Flood Insurance Program and Louisiana*, 60 TUL. L. REV. 61, 64 (1985).

[80] Hearings on S. 1985 Before The Subcommittee of Securities of the Committee on Banking and Currency, 90th Cong., 1st Sess., at 11 (1967) [hereinafter cited as Hearings on S.1985]; *see also* 2 U.S. Code Cong. & Adm. News 2967 (1968) (noting that Congress limited coverage to one through four family residential properties and small businesses); National Flood Insurance Act of 1968, Pub. L. No. 90-448, (codified as amended at 42 U.S.C. §§ 40014128 (1982 & Supp. I 1983) ("§1305(a) In carrying out the flood insurance program the Secretary shall afford a priority to making flood insurance available to cover residential properties which are designed for the occupancy of from one to four families and business properties which are owned or leased and operated by small business concerns.").

management regulations; and reduce Federal expenditures for disaster assistance and flood control."[81] "Section 1315 of NFIP prohibits FEMA from providing flood insurance unless the

[94] *Id.*

[95] *Id.*

[96] *Id.*

[97] *Id.* at 2. The extensive damage caused by Hurricane Betsy in the Gulf States triggered Southeast Hurricane Disaster Relief Act in 1965. *Id.* Additionally, the Act "authorized a feasibility study of a national flood insurance program." *Id.* The resulting report was entitled, "Insurance and Other Programs for Financial Assistance to Flood Victims*." Id.*

community adopts and enforces floodplain management regulations that meet or exceed the floodplain management criteria established in accordance with Section 1361(c) of the Act."[103] NFIP provides for mapping and identifying the Nation's floodplains.[104] Section 1360 of the 1968 Act, titled Identification of Flood Prone Areas, states that the Secretary of the Department of Housing and Urban Development may,

> (a) identify and publish information with respect to all flood plain areas, including coastal areas located in the United States, which have special flood hazards, within five years following the date of the enactment of this Act, and
>
> (b) establish flood-risk zones in all such areas, and make estimates with respect to the rates of probable flood-caused loss for the various flood-risk zones for each of these areas, within fifteen years following such date.

During its deliberations, the U.S. Congress became aware that if the Federal Government did not subsidize the premiums, insurance for "existing buildings" *i.e.* those constructed before a community joined the Program, would be prohibitively expensive.[82]

Under NFIP, communities must protect "new construction and substantially improved structures through adoption and enforcement of community floodplain management ordinances" in exchange for subsidized insurance for existing buildings.[106] The 1968 Act required that "full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved

[81] *Id.*

[82] *Id.* "Existing buildings" are generally referred to as Pre-FIRM (Flood Insurance Rate Map) buildings, which are buildings that were built before the flood risk was known and identified on the community's FIRM. *Id.* The government later found flood risk mapping to be problematic when Hurricane Sandy struck in 2012. In New York City, the "FIRM that was in effect on the eve of Hurricane Sandy and the FIRM that is still officially in place, is based on coastal modeling and data that are 30 years old." Lloyd Dixon et al., *Flood Insurance in New York City Following Hurricane Sandy*, at 7 (2013). Consequently, a high percentage of structures in New York City's high-risk areas were built before the first FIRM was issued for New York City in November of 1983. As of present, "about 26 percent of the 4.3 million NFIP policies in force are Pre-FIRM subsidized compared to 70 percent of the policies being subsidized in 1978." *Id.* [106] *Id.* at 3.

on or after the effective date of the initial Flood Insurance Rate Map (FIRM) for the community or after December 31, 1974, whichever is later." [83]

Shortly after the NFIP went into effect, the Federal Government realized that communities and individuals needed more of an incentive to voluntarily join the NFIP and purchase flood insurance.[84] Tropical Storm Agnes in 1972 resulted in large-scale flooding along the east coast, but only a few property owners in identified floodplains had flood insurance.[85]

[103] *Id.* 44 Code of Federal Regulations (CFR) Part 60, Criteria for Land Management and Use contains these floodplain management criteria, which is directed toward reducing personal and property damages in flood-prone areas. *Id.* [104] *Id.* "Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance." *Id.*

After Tropical Storm Agnes, Congress passed the Flood Disaster Protection Act of 1973.[86] which "prohibits Federal agencies from providing financial assistance for acquisition or construction of buildings and certain disaster assistance in the floodplains in any community that did not participate in the NFIP by July 1,1975, or within 1 year of being identified as flood-prone."[111] [T]he 1973 Act required that Federal agencies and federally insured or regulated lenders had to require flood insurance on all grants and loans for acquisition or construction of buildings in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP."[87] "The SFHA is that land within the floodplain of a community subject to a 1 percent or greater chance of flooding in any given year, commonly referred to as the 100-year flood."[88] The Federal Emergency Management Agency (FEMA) designates these SFHAs.[89]

In 1994, Congress amended the 1968 Act and the 1973 Act with the National Flood Insurance Reform Act (NFIRA). The 1994 Act's main goals were to "increase compliance by mortgage lenders with the mandatory purchase requirement and improve coverage; increase the amount of flood insurance coverage that can be purchased; provide flood insurance coverage for the cost of complying with floodplain management regulations by individual property owners (Increased Cost of Compliance coverage); establish a Flood Mitigation Assistance grant program to assist States and communities to develop mitigation plans and implement measures to reduce future flood damages to structures; codify the NFIP's Community Rating System; and require FEMA to assess

[83] *Id.* These buildings are also known as "Post-FIRM" buildings.

[84] *Id.*

[85] *Id*. "Only a few thousand communities participated in the NFIP and only 95,000 policies were in force."

[86] *Id*. [111]

Id.

[87] *Id*. This requirement is also known as the Mandatory Flood Insurance Purchase Requirement (MFIPR).

[88] *Id.* MRIPR, [R]esulted in a dramatic increase in the number of communities that joined the NFIP in subsequent years. In 1973, just over 2,200 communities participated in the NFIP. Within 4 years, approximately 15,000 communities had joined the Program. It also resulted in a dramatic increase in the number of flood insurance policies in force. In 1977, approximately 1.2 million flood insurance policies were in force, an increase of almost 900,000 over the number policies in force in December of 1973. *Id.*

[89] Anne Siders, *supra*, note 24 at 9.

its flood hazard map inventory at least once every 5 years."[90] The three basic components of the Program are: (1) identifying and mapping flood-prone communities; (2) requiring that premiums collected from owners by communities be deposited into the Fund, and (3) requiring that losses and operating and administrative costs be paid out of the Fund."[91] The Program was to pay these expenses out of premium dollars from 1987 to 1990.[92]

c. Reformation of the Flood Insurance Program: Biggert-Waters Act

In 2012, Congress once again decided reform was needed and it enacted Biggert-Waters Flood Insurance Reform Act in 2012.[93] The Biggert-Waters Act was enacted to resolve the issues of the former regulations. Specifically, despite the requirements of NFIRA , "coastal storms caused significant damage to shoreline properties. Many buildings were not built according to NFIP standards and required costly repairs after being damaged – costs that were not met by the low premiums."[94] In fact, in 2005 NFIP reported $23 billion in liabilities and only $2.2 billion in premiums paid annually.[95] "These efforts put the flood program on a distinctly different course: they end the bulk of explicit subsidies for development in environmentally sensitive areas*; greatly improve the maps used to determine which properties pay what rates for flood insurance*; and give private industry a small opening to begin assuming flood insurance risk."[96] The Act "phases out subsidized rates for newly purchased properties, lapsed policies, and new policies covering properties for the first time" in order to address NFIP's ongoing financial problems.[97] This change was to occur at a slow rate.[98] Further, the Biggert-Waters Act eliminated grandfathered ratings, which meant that "homeowners will be required to pay premiums based on the latest risk assessment and maps rather than the risk assessments and maps that were in place at the time of

[90] *Id.* at 4.

[91] *Id.* "The Program has the authority to borrow up to $1.5 billion from the Treasury, which must be repaid along with interest. *Id.* Prior to 1986, Federal salaries and program expenses, as well as the costs associated with flood hazard mapping and floodplain management were paid by an annual appropriation from Congress." *Id.*

[92] *Id.*

[93] Biggert-Waters Flood Insurance Reform Act, Pub. L. No. 112-141, 126 Stat. 405 (codified as amended at 42 U.S.C. § 4001-4129 (2006)).

[94] Anne Siders, supra, note 24.

[95] *Id.* at 10.

[96] Eli Lehrer, *Strange Bedfellows: Smartersafer.org and the Biggert-Waters Act of 2012*, 23 DUKE ENVTL. L. & POL'Y F. 351, 353 (2013).

[97] Anne Siders, *supra*, note 24 at 10.

[98] *Id.* Beginning in 2014, new rates will increase 20% per year until the full risk is reflected in the [124]
Id.

construction."[124] However, the Biggert Waters Act also expanded the coverage of the 1968 NFIP (limited to one through four unit residential and small businesses) to include all commercial properties.

As the effective date for the Biggert-Waters Act reforms approached, critics argued that "for those affected, this could result in substantial increase in their premiums." For example the warning went out that homes built prior to the time that the first Flood Insurance Rate Map (Pre-FIRM) was created for their area would see a 16-17% premium increase.[99] The real estate and insurance sectors became pitted against each other. [100] The politically powerful National Association of Realtors (NAR) sent out a Call for Action: Flood Insurance Issues Could Sink Your Sales in November 2013 because "[t]he legally required transition to true risk rates have plagued consumers with increase in rates beyond anyone imagined possible." [101]Opponents argued that as

a result of these changes, developers and new buyers would be discouraged from purchasing homes in vulnerable areas.

d. Homeowner Flood Insurance Affordability Act of 2014

On March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 (Flood Insurance Affordability Act) into law.[102] "This law repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, which was enacted in 2012, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented."[103] Politically, the most important change probably is that the Flood Insurance Affordability Act prohibits FEMA through the NFIP from implementing Section 207 of BiggertWaters Act which directs FEMA to ensure that certain properties' flood insurance rates reflects their full risk after a mapping change or update occurs.[130]

[99] *Id; see also* Lloyd Dixon et al., *Flood Insurance in New York City Following Hurricane Sandy* (2013).

[100] *See* Alan Zibel and Leslie Schism, *Flood Program Puts Industries at Odds,* WALL ST. J., Dec. 19, 2013, *available at*

http://online.wsj.com/news/articles/SB10001424052702304773104579268620558111400?mg=reno64wsj&urll=http%3A%2F2Fonline.wsj.com%2FSB10001410527230477310457926862055811140 0.html (referring to lobbying of real estate agents and home builders to delay increases for four years while insurance industry opposed delays).

[101] *Call for Action: Flood Insurance Issues Could Sink Your Sales,* REALTOR ACTION CENTER (NOV. 19, 2013), *AVAILABLE AT* HTTP://WWW.REALTORACTIONCENTER.COM/NEWS/CALL-FOR-ACTION-FLOOD.HTML. (CALLING ALL members of NAR, asking them to contact members of Congress and Senators to support the "Homeowner Flood Insurance Affordability Act" it proposed to delay impact of Biggert-Waters legislation).

[102] H.R. 3370, the Homeowner Flood Insurance Affordability Act.

[103] National Flood Insurance Program, *Biggert-Waters Reform Act of 2012*, FLOODSMART.GOV, https://www.floodsmart.gov/floodsmart/pages/bw-12.jsp (last visited May 6, 2014). [130] FEMA, Federal Insurance and Mitigation Administration

Among other things, the Flood Insurance Affordability Act:

- prohibits the Administrator of the Federal Emergency Management Agency (FEMA) from: (1) increasing flood insurance risk premium rates to reflect the current risk of flood for certain property located in specified areas subject to a certain mandatory premium adjustment, or (2) reducing such subsidies for any property not insured by the flood insurance program as of July 6, 2012, or any policy that has lapsed in coverage as a result of the policyholder's deliberate choice (Pre-Flood Insurance Rate Map or pre-FIRM properties) and sets forth expiration dates for such prohibitions;

- amends the National Flood Insurance Act of 1968 (NFIA) to prohibit the Administrator from providing flood insurance to prospective insureds at rates less than those estimated for any property purchased after the expiration of such six-month period (currently, any property purchased after July 6, 2012);

- directs FEMA to: (1) restore during such six-month period specified estimated risk premium rate subsidies for flood insurance for pre-FIRM properties and properties purchased after such six-month period, and (2) submit to certain congressional committees a draft affordability framework addressing the affordability of flood insurance sold under the National Flood Insurance Program;

- prescribes procedures for expedited congressional consideration of legislation on FEMA affordability authorities;

- permits FEMA to enter into an agreement with another federal agency either to: (1) complete the affordability study, or (2) prepare the draft affordability framework;

- directs FEMA submit to certain congressional committees the affordability study and report;

- amends NFIA to authorize FEMA to reimburse homeowners for successful map appeals;

- makes any community that has made adequate progress on the construction (as under current law) or reconstruction (new) of a flood protection system which will afford flood protection for the one-hundred year frequency flood eligible for flood insurance at premium rates not exceeding those which would apply if such flood protection system had been completed;

- revises guidelines governing availability of flood insurance in communities restoring disaccredited flood protection systems to include riverine and coastal levees; and,

- requires FEMA to: (1) rate a covered structure using the elevation difference between the flood proofed elevation of the covered structure and the adjusted base flood elevation of the covered structure; and (2) designate a Flood Insurance Advocate to advocate for the fair treatment of policy holders under the National Flood Insurance Program and property owners in the mapping of flood hazards, the identification of risks from flood, and the implementation of measures to minimize the risk of flood.[104]

2. Future impact of the Federal Flood Insurance Program

While an objective evaluation of the Biggert Waters Act would be that it provides initial steps in managed retreat at least, the current highly politicized legislative system, reflected in the amendments passed just as the Biggert-Waters Act was to become effective law on April 1, 2014, makes predictions unreliable and incredible about what the federal policy will be in the future. Although Robert V.M. Verchick suggests that the Biggert-Waters Act may predict "a developing tendency-sometimes institutionalized as policy-to encourage retreat in many cases," [105] the passage of the Flood Insurance Affordability Act in 2014 defers much of the impact for at least four years.

The recent experiences of the Australians as they cope with SLR may be a warning.[106]

V. Conclusions and Reflections

The lessons and suggestions for transactional attorneys as they advise commercial real estate clients who will mitigate and adapt to the challenges of climate change are explored at length in the author's forthcoming article, "The Evolving Role for Transactional Attorneys Responding to Client Needs in Adapting to Climate Change."[107] It is one of the papers that are part of a symposium issue of the John Marshall Law Review. [108] This article will end with only references to the article and other sources. More importantly, the legal update here raises additional questions that remain for future consideration.

First, it is apparent that ultimately business clients will push for a legal system that is more responsive to adaptation to climate change. Affected businesses and investors will be the impetus for legal adaptation. [109] Real estate investors already are being advised to "be on the lookout for areas that show the political will to address SLR, and avoid areas that do not." [110] The insurance industry is gaining economic, and thereby political, power as it takes on the risks of adaptation (or

[104] H.R.3370 - Homeowner Flood Insurance Affordability Act of 2014
113th Congress (2013-2014), available at: http://beta.congress.gov/bill/113th-congress/house-bill/3370 (last visited May 5, 2014).
[105] Robert R.M. Verchick, *supra* , note 40.
[106] *See,* Justine Bell, M. Baker-Jones, *supra*, note 52.
[107] *See generally* Hammond, *supra*, note 3.
[108] Robert R.M. Verchick, *supra,* note 40.
[109] Hammond, *supra,* note 3 at 147-151.
[110] Seidel, Richards, Beitsch, *supra*, note 9 at 27.

the lack thereof). This ability of the insurance industry to incentivize behavior will have an impact on lawmakers as well as business. [111]

Many important aspects of a transactional practice will involve issues regarding how adaptation will play out. For acquisitions the concern should be how climate change and climactic events will impact the due diligence prudent buyers undertake and the disclosures the sellers may be required to give to buyers. Due diligence should include investigation of water supply and quality, zoning/land use restrictions, condition of the infrastructure serving the real estate, availability and cost of insurance for multiple risks.[112] For lending transactions a question is whether climate disasters will be dealt with as waste currently is - often providing lender with a right to call the loan? Should special adaptation construction loans have an exception to the general prohibition of junior loans? What happens to insurance proceeds upon a climatic casualty loss? Should proceeds be available for rebuilding? [113] In the context of commercial leasing, obligations to rebuild may become more complicated, especially in determining rights to an allocation of funds for rebuilding. Will *force majeure* require new meaning? How will adaptation to climate change affect model leases? Is it feasible to expect a title insurance company to issue an endorsement giving assurances that the insured parcel is not subject to climate risk? [114] Finally, these questions:

> Question: What are the Implications if government does not take action? No barriers? No flood insurance to rebuild? Is there any government liability to landowners who are damaged by the inaction?
>
> Answer: Probably there is no liability absent a statute. Government has no obligation to do anything even to decrease the size of doom.
>
> Question: Is the requirement of flood insurance by federally insured lenders/mortgagees itself a taking when the federal subsidy disappears?
>
> Answer: From the standpoint of new development, government subsidized flood insurance benefits the rich landowner who buys a new house. There is no reason to subsidize costs of climate change damages and pass those on to all citizens (but what about existing housing where flood plain comes to the neighborhood?)

> Question: Will government regulations like building codes prohibiting building except with terrifically high cost to build constitute a "taking"?
>
> Answer: Yes, but it would be highly unlikely for such a case to be successful because such land use regulations are designed to serve very highly valued public purposes. It is a balancing test.

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[111] Hammond, *supra* note 3 at 151-154.
[112] Hammond, *supra*, note 3 at 597-602.
[113] Id. at 602-603.
[114] Id. at 603-604.

Question: What about valuing forced retreat? How will courts value real property no longer usable because government won't put up barriers/armor to defend the real estate as in *Cedars*?

Answer: Probably this is the same question as "does the government have an affirmative obligation to protect property/land from serious harm?" (No)

If fair market value decreases as the land deteriorates (because it is underwater for example), the just compensation if government condemns will be closer to zero. This is already being predicted in Climate bubbles. [115]

[115] Nolan, *supra*, note 22.