PLANNING AND PERMITTING TO REDUCE AND RESPOND TO GLOBAL WARMING AND SEA LEVEL RISE IN FLORIDA

RICHARD GROSSO*

I. INTRODUCTION: THE THREAT

The United States Supreme Court has recognized the impacts of climate change to include "a number of environmental changes that have already inflicted significant harms, including 'the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years.'"[1] Sea level rise is expected to "erode beaches; drown marshes and wetlands; damage barrier islands, habitat, and ecological processes; cause saline intrusion into freshwater ecosystems and groundwater; increase flooding or inundation of low-lying areas; and damage or destroy private and public property and infrastructure."[2]

Florida is the single most vulnerable of the 50 states to higher tides associated with sea level rise.[3] "Florida is especially vulnerable to the effects of sea-level rise. It has more than 1,200 miles of coastline, almost 4,500 square miles of estuaries and bays, and more than 6,700 square miles of other coastal waters. The entire state lies within the Atlantic Coastal Plain, with a maximum elevation less than 400 feet above sea level, and most of Florida's 18 million residents live less than 60 miles from the Atlantic Ocean or the Gulf of Mexico. Three-fourths of Florida's

---

* The author thanks Erin Deady, Esq., Jacki Lopez, Esq., of the Center for Biological Diversity, Thomas Ruppert, Esq., of the University of Florida Sea Grant program, AND Jason Totoiu, Esq., of the Everglades Law Center, Inc., for their many contributions of ideas, analysis, and information which can be found throughout this article, and NSU law students Billie Brock, Candice Cobb, Renaldo Diaz, Christopher Dutton, Glenn Hasson, Marvel Pauyo, Amber Roucco, and Sean Schwartz, and for their excellent research and analysis skills.

1. Massachusetts v. EPA, 549 U.S. 497, 521 (2007) (alteration in original) (quoting COMM. ON THE SCI. OF CLIMATE CHANGE, NAT'L RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 16 (2001)).

2. Jessica A. Bacher and Jeffrey P. LeJava, *Shifting Sands and Burden Shifting: Local Land Use Responses to Sea Level Rise in Light of Regulatory Takings Concerns*, 35 ZONING & PLANNING L. REP. 1, 1 (2012) (citing Jessica A. Bacher, *Yielding to the Rising Sea: The Land Use Challenge*, 38 REAL EST. L.J. 96, 96 (2009)).

3. Letter from Center for Biological Diversity to FEMA, 7, 9 & nn.37 & 46 (Jul. 16, 2012) (citing Gillis, Justin. Mar. 13, 2012. Rising Sea Levels Seen as Threat to Coastal U.S. The New York Times; Schlacher 2008 (article on sea level rise threats to the U.S.); Tebaldi, C., B. H. Strauss, and C. E. Zervas. 2012. Modeling sea level rise impacts on storm surges along US coasts. Environmental Research Letters 7:014032 (on sea level impacts in the U.S.).

population resides in coastal counties that generate 79% of the state's total annual economy. These counties represent a built-environment and infrastructure whose replacement value in 2010 is $2.0 trillion and which by 2030 is estimated to be $3.0 trillion."[4] As of 2014, over 60% of the state's beaches were experiencing erosion, as Florida had "407.3 miles of critically eroded beach, 8.7 miles of critically eroded inlet shoreline, 93.9 miles of non-critically eroded beach, and 3.2 miles of non-critically eroded inlet shoreline" [5] "Critical" erosion is that which has occurred to the extent that "upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost." [6] The primary "causes of erosion and beach migration in Florida are inlet management, storms, sea-level rise, and armoring."[7]

Florida's "topography is relatively flat," such that "minor increases in sea level can cause beaches to migrate far landward."[8] This "shoreline recession" varies greatly throughout the state, which is estimated to "be subject to 500 to 1,000 feet of shoreline recession for each foot of sea level rise."[9] Much of Florida is already experiencing increased tidal flooding from sea level rise[10], and the state has experienced eight to nine inches of rise over the past 100 years.[11] Southeast Florida is particularly vulnerable. A 2008 report

---

4. FLA. OCEANS & COASTAL COUNCIL, CLIMATE CHANGE AND SEA-LEVEL RISE IN FLORIDA: AN UPDATE OF THE EFFECTS OF CLIMATE CHANGE ON FLORIDA'S OCEAN & COASTAL RESOURCES 1-2 (2010), *available at* https://campus.fsu.edu/bbcswebdav/pid-7223093-dt-content-rid-41296749_3/orgs/SCD_5539_org/Climate_Change_and_Sea_Level_Rise.pdf.

5. *CRITICALLY ERODED BEACHES IN FLORIDA*, FLA. DEP'T OF ENVTL. PROT (2014). Id at 3. (available at http://www.dep.state.fl.us/beaches/publications/pdf/CriticalEroionReport.pdf)

6. *Id.* at 5.

7. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 66–67 (2008) (citing BUREAU OF BEACHES & COASTAL SYS., FLA. DEP'T OF ENVTL. PROT., STRATEGIC BEACH MANAGEMENT PLAN 1 (2008)).

8. *Id.* at 68.

9. *Id.* (citing ROBERT E. DEYLE ET AL., ADAPTIVE RESPONSE PLANNING TO SEA LEVEL RISE IN FLORIDA AND IMPLICATIONS FOR COMPREHENSIVE AND PUBLIC-FACILITIES PLANNING (2007)).

10. Thomas Ruppert & Carly Grimm, *Drowning in Place: Local Government Costs and Liabilities for Flooding Due to Sea-level Rise*, 87 FLA. BAR J. 29 (2013), *available at* http://www.floridabar.org/DIVCOM/JN/JNJournal01.nsf/8c9f13012b96736985256aa900624829/d1cd8a7e6519800885257c1200482c39!OpenDocument. Moreover, as the article explains, "The roughly four and one-half inches of rise in the last 50 years has decreased the efficiency of some older stormwater systems designed to function with lower sea levels. As a result, tidal waters back up within the drainage systems and stormwater systems drain slower, causing more frequent flooding. Tens of billions of dollars of real estate in Florida are potentially at risk due to [sea-level rise] and its commensurate flooding." *Id.* (citing SE. FLA. REG'L CLIMATE CHANGE COMPACT CNTYS., A REGION RESPONDS TO A CHANGING CLIMATE: REGIONAL CLIMATE ACTION PLAN 9 (2012)).

11. *Id.* (citing *Key West Data*, PERMANENT SERVICE FOR MEAN SEA LEVEL, http://www.psmsl.org/data/obtaining/stations/188.php (last updated Feb. 11, 2014).

of the Miami-Dade County Task Force on Climate Change reported that:

> Miami-Dade County as we know it will significantly change with a 3-4 foot sea level rise. Spring high tides would be at about + 6 to 7 feet; freshwater resources would be gone; the Everglades would be inundated on the west side of Miami-Dade County; the barrier islands would be largely inundated; storm surges would be devastating; [and] landfill sites would be exposed to erosion [,] contaminating marine and coastal environments.[12]

The local, state, and federal agencies with the police power responsibility to protect Florida and its citizens must be prepared to take the challenging but necessary actions essential to our state's resiliency. Political leaders at all levels of government must be prepared to use all of the policy and regulatory tools available to meet the challenge of climate and sea level change. This article describes those tools.

A. The Legal & Policy Issues

Florida law provides many existing legal mechanisms to increase our capability to reduce and respond to the impacts of global warming and sea level rise. This article will focus primarily on climate *adaptation* [13] strategies, discussing the legal/policy

---

12. John R. Nolon, *Regulatory Takings and Property Rights Confront Sea Level Rise: How Do They Roll?*, 21 WIDENER L.J. 735, 737 (2012) (alterations in original) (quoting MIAMI-DADE CNTY. CLIMATE CHANGE ADVISORY TASK FORCE, SECOND REPORT AND INITIAL RECOMMENDATIONS 4 (2008).

13. *See generally* Robert R.M. Verchick & Abby Hall, *Adapting to Climate Change While Planning for Disaster: Footholds, Rope Lines, and the Iowa Floods*, 2011 BYU L. Rev. 2203 (2011) (discussing how preexisting laws and standards could be used to allow for the integration of climate control concerns and how dynamic networks of public and private stakeholders can aid in this adaptive effort). In defining climate adaption, the article states, "The U.N. Intergovernmental Panel on Climate Change (IPCC) defines climate change adaptation as 'the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects.' The concept recognizes that climate impacts have occurred and are continually occurring; it presumes that many of these trends will inevitably continue to some degree, independent of our efforts to reduce greenhouse gases ('mitigation'). Adaptation aims to lessen the magnitude of these impacts through proactive or previously planned reactive actions. As the IPCC said, 'Mitigation will always be required to avoid "dangerous" and irreversible changes to the climate system. Irrespective of the scale of mitigation measures that are implemented in the next 10–20 years, adaptation measures will still be required due to inertia in the climate system.' Or, as President Obama's science advisor, James Holdren, explains, 'We must avoid the climate impacts we can't manage and manage the climate impacts we can't avoid.'" *Id.* at 2209 (footnotes

implications of comprehensive land use planning and environmental policies and strategies that can be effective in responding to climate change, sea level rise, and storm surge and related problems. It focuses on the climate mitigation strategies that can be pursued under Florida law. Particular emphasis is placed on the enforcement of such laws in ways that, at the same time, both reduce human contributions to climate change and increase a community's adaption/resiliency [14] capabilities. [15] The article also addresses the property rights implications for governmental regulatory responses, and legal aspects of regulating in the face of scientific dispute/uncertainty.

II. THE LEGAL TOOLS

A. Florida's Comprehensive Land Use Planning Law

1. Land Use and Zoning Authority: Where and How We Live & Build[16]

"Zoning is the most powerful tool that local governments have to preemptively mitigate hazards."[17]

"Land use planning in essence chooses particular uses for the land; environmental regulation, at its core, does not mandate particular uses of the land but requires only that, however the

---

omitted).

14. "The United Nations (U.N.) International Strategy for Disaster Reduction defines 'resilience' in this context as '[t]he ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.'" Nolon, *supra* note 12, at 769 (quoting *Terminology*, UNITED NATIONS INT'L STRATEGY FOR DISASTER REDUCTION, http://www.unisdr.org/we/inform/terminology (last updated Aug. 30, 2007)).

15. *See* U.S. ENVTL. PROT. AGENCY, NATIONAL WATER PROGRAM 2012 STRATEGY: RESPONSE TO CLIMATE CHANGE 24 (2012), *available at* http://water.epa.gov/scitech/climatechange/upload/epa_2012_climate_water_strategy_full_report_final.pdf ("Adaptation and mitigation go hand in hand . . . .").

16. *See* SE. FLA. REG'L CLIMATE CHANGE COMPACT CNTYS; *A Region Responds to a Changing Climate*, Southeast Florida Regional Climate Change Compact Counties, Regional Climate Action Plan *Id* at 14. (available at http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/regional-climate-action-plan-final-ada-compliant.pdf) (Last visited March 22, 2015) (Hereafter "Southeast Florida Regional Climate Action Plan"). RG: also, im attaching that source document for you.

17. JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., ZONING FOR SEA-LEVEL RISE: A MODEL SEA-LEVEL RISE ORDINANCE AND CASE STUDY OF IMPLEMENTATION BARRIERS IN MARYLAND 2 (2012), *available at* http://www.georgetownclimate.org/sites/www.georgetownclimate.org/files/Zoning%20for%20Sea-Level%20Rise%20Executive%20Summary%20Final.pdf.

land is used, damage to the environment is kept within prescribed limits."[18] The most important and effective adaptation strategies (and many of the mitigation strategies) have everything to do with where and how we build buildings and infrastructure. The key mechanisms through which local governments influence the rate and extent of climate change and adaptation are planning and zoning, infrastructure, and budget decisions. A successful state response to the challenge of climate and sea level rise changes begins with, and cannot be achieved without, effective land use planning and zoning.

In what may be the leading regional collaboration effort in the country, the Regional Climate Action Plan is a collaborative plan for informal coordination among local governments in Southeast Florida developed under the auspices of the Southeast Florida Regional Climate Change Compact and adopted by Monroe, Miami-Dade, Broward and Palm Beach counties and several municipalities. The Plan calls for "concerted action in reducing greenhouse gas emissions and adapting to regional and local impacts of a changing climate," through locally tailored application of 110 action items under seven goal areas over the next five years.[19] The policy recommendations will be implemented through, among other things, (1) "existing legal structures, planning and decision-making processes"; (2) "development of new policy guiding documents", with mutually "consistent goals and progress indicators," by local and regional governing bodies; and (3) "processes for focused and prioritized investments."[20]

B. Avoiding the Hazard

"Avoiding the hazard is the best way to deal with coastal hazards."[21]

Writing in 2008 about the history of coastal development in Florida, Ruppert observed that "[c]onstruction sited sufficiently landward of the active beach to allow for natural shoreline migration effectively minimizes coastal hazards to development, protects natural ecosystems, and reduces the multi-million-dollar yearly cost of beach nourishment and armoring. In many instances, past developers built too close to the beach, resulting

18. Solid Waste Agency of N. Cook Cnty. v. U.S. Army Corps of Eng'rs, 531 U.S. 159, 191 (2001) (Stevens, J., dissenting) (quoting Cal. Coastal Comm'n v. Granite Rock Co., 480 U.S. 572, 587 (1987) (internal quotation marks omitted).

19. SE. FLA. REG'L CLIMATE CHANGE COMPACT CNTYS., *supra* note 17, at v-vi.

20. *Id.* at vi.

21. Ruppert, *supra* note 6, at 97.

in high losses from storms and exorbitant costs for rebuilding, armoring, and nourishing of beaches."[22]

The most important factor that will determine the future of an area is how it is zoned—whether the type and intensity of use allowed by the local government is inherently suited for the natural character of the land now and in the future. Continuing to allow development in vulnerable areas, or to encourage investment and infrastructure and loss of coastal and floodplain natural features, will ultimately preclude landward migration of beach and floodplain ecosystems and commit unsustainable amounts of public resources to protection efforts.

C. Comprehensive Plans as a Powerful Legal Tool

Florida's Community Planning Act requires each local government to adopt and maintain a comprehensive plan that meets identified standards in state law and which governs all subsequent zoning and development decisions [23] by the local government.[24]

Two Florida cases in particular strongly support a local government's ability to "down-plan" or "down-zone" property whenever there are valid land use planning reasons to do so, and so long as the resulting restrictions do allow some economically viable use.

The Act requires local governments to plan for projected growth, ensure the adequate provision of necessary infrastructure and services, and protect environmental resources.[25]

Comprehensive plans make the basic policy decisions about the type and intensity/density of land uses, based on "the big picture" evaluation of all relevant issues. The Act's provisions concerning the provision of or payment for necessary infrastructure by developers, and its provisions concerning the factors used to

---

22. *Id.*

23. "A local comprehensive land use plan is a statutorily mandated legislative plan", similar to a "constitution," "to control all future development within a county or municipality." Citrus Cnty. v. Halls River Dev., Inc., 8 So.3d 413 (Fla. Dist. Ct. App. 2009) (citing FLA. STAT. § 163.3167(1) (2005); Machado v. Musgrove, 519 So.2d 629, 631–32 (Fla. 1st DCA 1987)). *See also* Galaxy Fireworks, Inc. v. City of Orlando, 842 So. 2d 160, 165 (Fla. 3d. DCA 2003); Home Builders & Contractors Ass'n of Brevard, Inc. v. Dep't of Cmty. Affairs, 585 So. 2d 965, 966 (Fla. 1st DCA 1991).

24. *See* FLA. STAT. § 163.3167 (2014) (requiring the adoption of comprehensive plans to guide future development and growth); FLA. STAT. § 163.3177 (setting out required and optional elements of comprehensive plans); FLA. STAT. § 163.3194 (requiring land development regulations to be consistent with comprehensive plans) (2013).

25. *Id.*

determine the appropriate amount, location and types of development are important legislative requirements for the financial and ecological sustainability of land use plans. Comprehensive planning decisions are legislative, and subject to the most deferential standards of judicial review.[26]

The greatest level of discretion applies to decisions that decline to amend an existing comprehensive plan, which will be upheld only where a plaintiffs meets the burden of proving a constitutional violation – for example a property rights violation – or that the denial was not even "fairly debatable". Any valid planning rationale will uphold the decision.[27] Thus, statutory authority for, and the nature of, local government comprehensive planning decisions tends to provide for local governments a significant amount of discretion to prohibit land uses that are potentially inconsistent with the current and projected realities of sea level rise and storm surge.[28]

A decision to approve a plan amendment also involves discretion. Challengers have a difficult burden of proving that the decision fails to comply with state law.[29] Because plan amendments must comply with state law, their adoption is somewhat less discretionary than are decisions declining to amend a plan. That law however, generally supports comprehensive plan amendments designed to reduce or respond to climate and sea level rise impacts.[30]

A key implication of the legislative nature of planning decisions, which require local elected officials to weigh and balance myriad, often unquantifiable, considerations is that even very strict limits on development, such as development caps, will not be overturned by courts so long as they are based on study, and not arbitrary or unconstitutional.[31]

The next section of this article will highlight Florida's *Community Planning Act* to describe the ample legal available to

---

26. Martin Cnty v. Yusem, 690 So. 2d 1288, 1295 (Fla. 1997); Brevard County v. Snyder, 627 So. 2d 469 (Fla. 1993).

27. *Yusem*, 690 So. 2d at 1295 (Fla. 1997).

28. This is true, notably in the face of private property rights, of planning actions that reduce the type and intensity of uses allowed in vulnerable areas and even more so for decisions declining to amend comprehensive plans to allow more intensive uses.

29. FLA. STAT. § 163.3184(5)(c)1 (2014)., and 2.a, (2014).

30. *See* Grosso, *Regulating For Sustainability: The Legality Of Carrying Capacity-Based Environmental And Land Use Permitting Decisions,* 35 NOVA L. REV. 711, 738-740 (Summer 2011).

31. *See* Grosso, *supra* note 32, at 742-745. (citing *City of Hollywood v. Hollywood, Inc.*, 432 So. 2d 1332 (Fla. 4th DCA 1983), *City of Boca Raton v. Boca Villas Corp., City of Boca Raton v. Boca Villas Corp*., 371 So. 2d 154, 155, 159 (Fla. 4th DCA 1979) (per curiam); and *Innkeepers Motor Lodge, Inc. v. City of New Smyrna Beach,* 460 So. 2d 379 (Fla. 5th DCA 1984).

communities in Florida to reduce and respond to climate and sea level rise impacts, and to provide examples that can be borrowed and adapted to other states.

D. Florida's Community Planning Act

Florida's *Community Planning Act* does not mention the phrase "climate change". Its requirements, however, when applied to the available science about the impact of land use decisions on climate and sea level, clearly require that local planning and development decisions reflect this reality. The legal authority and requirements for protecting people, buildings and infrastructure, and natural resources through land use planning described below will require in many cases decisions that deny increases in development intensity in vulnerable areas. In many other cases, the law will support or require a reduction in what can be built, and how, in undeveloped vulnerable areas, and in what can be redeveloped after existing buildings are demolished or substantially damaged.

E. Comprehensive Plans Must Be Based On Professionally Accepted Data and Analysis

Florida law requires that comprehensive plans be "based upon relevant and appropriate data" and "analysis".[32] Data must be taken from "professionally accepted" sources[33]. To be "based on" data means to "react to it in an appropriate way and to the extent necessary indicated by the data available on that particular subject at the time of adoption of the plan or plan amendment at issue.[34] Given the overwhelming bulk of the scientific data currently available related to sea level rise and climate change, any planning decisions that are not based upon such information will be legally deficient.

The law does however give local governments the discretion however, to choose, among different "professionally accepted" sources[35] of information about climate and sea level rise impacts, which source to use as the basis for its planning decisions.

---

32. FLA. STAT. § 163.3177(1)(f) (2014).
33. FLA. STAT. § 163.3177(1)(f)(2) (2014).
34. FLA. STAT. § 163.3177(1)(f) (2014) (emphasis added).
35. FLA. STAT. § 163.3177(1)(f)(2) (2014) ("The application of a methodology utilized in data collection or whether a particular methodology is professionally accepted may be

Next, the Act authorizes local governments to base the underlying data and analysis, as well as the legally operative parts of a comprehensive plan on "at least" a 10-year planning period.[36] The best planning for sea level rise impacts, particularly as it relates to allowable land uses and infrastructure siting and maintenance, would take advantage of his authorization.

F. Future Land Use Element

The most important part of a Comprehensive Plan is the Future Land Use Element, which assigns the "distribution, location, and extent of" the land uses, and the "population densities and building and structure intensities" allowed on each parcel of land. Allowable land uses "shall be based upon surveys, studies, and data regarding … [t]he character of undeveloped land… [and] the availability of water supplies, public facilities, and services."[37] Future land use amendments must be based on data[38] regarding the area including "[t]he availability of water supplies"[39] and "analysis of the suitability of the plan amendment for its proposed use considering the character of the undeveloped land, soils, topography, natural resources, and historic resources on site."[40]

This legal mandate that the most basic decisions about what can be built where, how intensely, and how, be based on the character of the land (for example, its vulnerability to sea level rise and storm surge and its relationship to climate impacts) and the projected availability of infrastructure and services (considering, for example, sea level and storm surge data) is the primary mechanism by which land use planning decisions impact mitigation and adaptation.

---

evaluated. However, the evaluation may not include whether one accepted methodology is better than another.").

36. FLA. STAT. §§ 163.3177(1)(f)(3), 163.3177(2); § 163.3177(5)(a) (2014).

37. FLA. STAT. § 163.3177(6)(a) (2014).

38. The future land use element must include a future land use map or map series, which must show the following natural resources, if applicable: (I) Existing and planned public potable waterwells, cones of influence, and wellhead protection areas (II) Beaches and shores, including estuarine systems; (III) Rivers, bays, lakes, floodplains, and harbors; (IV) Wetlands; (V) Minerals and soils; (VI) Coastal high hazard areas. FLA. STAT. § 163.3177 (6)(a)(10)(c) (2014).

39. FLA. STAT. § 163.3177 (6)(a)(2)(d) (2014).

40. FLA. STAT. § 163.3177 (6)(a)(8) (2014).

The Act also requires comprehensive plans to include "criteria to:

> C. Encourage preservation of recreational and commercial working waterfronts for water-dependent uses in coastal communities.***
> E. Coordinate future land uses with the topography and soil conditions, and the availability of facilities and services.
> F. Ensure the protection of natural and historic resources.
> G. Provide for the compatibility of adjacent land uses." §163.3177(6)(a)3, Fla. Stat.

Next, Section 163.3177(6)(g)5, Fla. Stat., requires that local governments "[u]se ecological planning principles and assumptions in the determination of the suitability of permitted development". Given the state of the science, it would be hard to comply with this requirement if planning decisions are not based upon climate change/sea level rise information.

This fundamental land use planning authority is the fundamental difference between the legal authority enjoyed by local governments, and that given to state and regional wetland agencies under Florida law. Local governments *alone* have the authority to determine, in the first instance, the most appropriate use of all lands, including wetlands, while state permitting laws are intended to ensure that all impacts to wetlands that do occur as a result of permitted development are adequately offset. Accordingly, local governments have broad authority to limit and even prohibit development within wetlands and are not preempted from doing so by state environmental permitting laws. There is strong precedent under Florida's planning laws, from the comprehensive plans for Monroe County and its municipalities, that the locations, standards, and even the overall amount of development allowed in land use plans not exceed the "carrying capacity" of a community's land and water resources (including ecosystems, such as coastal zones) and infrastructure (for example hurricane evacuation capabilities, potable and wastewater capacity, stormwater management) capabilities to accommodate such demands and impacts. This planning approach is likely to come into increasing use in places where there are real physical limits to the ability to accommodate development safely and

without unacceptable environmental impacts.[41] Florida law recognizes that "physical limitations on population growth" may prevent a municipality from accommodating in its comprehensive plan, a "proportional share of the total county population…."[42]

Denying requested changes to current rules that would intensify land uses in vulnerable areas is the necessary first step. Local governments should deny requests for intensification of land uses in vulnerable areas (such as floodplains and coastal hazard areas). There is generally no property right to an increase in allowable uses[43], and declining to amend a comprehensive plan or zoning code is generally very discretionary[44] and *relatively* easy politically.

In many cases, however, the necessary response to climate-sea level rise changes will require the most difficult of all governmental actions – down-zonings (or plannings). The extent of the down-zoning will increase the political difficulty, and the greatest reductions in allowable use will create the potential for "takings" challenges. Such changes should not be done arbitrarily, but enacted where the current zoning allowances are now known to be unsuitable based upon current science. Intensities that, as a practical matter, are not likely to be able to be made appropriate (from a safety, ecological or other relevant perspective) through building standards, should be re down-graded. The same is true for those which would make soft-protection, beach, coastal and floodplain habitat migration and protection ineffective or unlikely.

This approach will often require limiting uses in vulnerable areas to low-density, large lot, agricultural or passive recreational uses. Local and state governments, as well as federal permitting agencies, must direct development concentrations non-environmentally sensitive upland areas outside vulnerable areas. Local, regional and state agencies must discourage new development or post-disaster redevelopment in vulnerable areas to reduce future risk and economic losses from sea level rise and flooding. For new construction and infrastructure that is allowed in these areas, vulnerability reduction measures must

41. *See* Grosso, *supra* note 32, at 747–751 (citations omitted).
42. FLA. STAT. §163.3177 (1)(f)(3) (2014).
43. *See*, e.g. Brevard County v. Snyder, 627 So. 2d 469, 475 (Fla. 1993).
44. *See*, e.g. Martin County v. Yusem, 690 So. 2d 1288 (Fla. 1997).

be required such as additional hardening, higher floor elevations or incorporation of natural infrastructure for increased resilience.[45]

G. The Property Rights Implications of Limitations on Types of Use and Intensity

1. The Denial of "Up-Plannings" or Upzonings

The most easily defended planning-zoning approach to climate mitigation and adaptation is the denial by a city or county of any requested amendment to a comprehensive plan or zoning map that would increase the allowed uses, the density/ intensity of those uses, or the development standards on vulnerable land. In Florida, there is no property right to an "up-planning" or "up-zoning" unless the currently allowed uses fail to allow any economically viable use of the land.[46] A local government's first step towards resiliency is to decline to increase the challenge ahead and deny requests for density/ intensity or use increases in vulnerable areas or that would increase their community's contribution to climate change, for example, by replacing natural lands with concrete, or by creating energy-inefficient (for example, sprawl- type) land use patterns.

2. Reductions in Use and/or Density/ Intensity Allowances

The most fundamentally effective, yet most politically difficult and legally challenging, policy decision is to reduce allowable land uses and development densities/intensities in vulnerable areas. The public policy, and legal support, for such measures is the necessity to protect nearby landowners and citizens from the physical, safety, and ecological impacts of development unsuited for the character of the area. Because they are politically difficult to enact, they will likely be pursued only where clearly appropriate based on the ecological and physical vulnerability of specific areas. Where they are necessary however, less effective measures will likely be wholly inadequate to the task of making an area resilient, and they should be implemented to the full extent allowed by private property rights law.

---

45. Southeast Florida Regional Climate Action Plan, *supra* at 33. (*available at* http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/regional-climate-action-plan-final-ada-compliant.pdf) (Last visited Mar. 22, 2015).

46. Brevard County v. Snyder, 627 So. 2d 469, 475 (Fla. 1993).

In Florida, local governments may reduce allowable uses, densities and intensities as long as the reductions do not go so far as to preclude any economically viable use of the land.[47] There is generally no vested right to the continuation of existing zoning allowances.[48] In *Glisson v. Alachua County,* [49] comprehensive land uses plan amendments that reduced the allowable residential density from one unit per acre to one unit per five acres, were not held to be takings since the change was not arbitrary, and the remaining uses were economically viable. The validity of the amendments was strongly supported by the fact that they were adopted under Florida's growth management law.[50]

In a case of direct relevance to the impacts of climate change and sea level rise, *Lee County v Morales* [51] rejected a "takings" claim where the end result of the challenged down-zoning still allowed the owner an economically viable use. The Court upheld a down-zoning of a barrier island from a *commercial* designation to an *Agriculture/Rural Residential* designation. The purpose of the rezoning was to preserve archaeological and environmental resources, and guard against the threat of hurricanes and flooding. The new zoning category allowed agricultural uses and the construction of single family homes on 1 acre tracts, with allowance for a variance for properties of less than 1 acre.[52] It was important to the Court's analysis that the downzoning was not arbitrary but was instead based upon an expert study and legitimate environmental, public safety, and concerns related to protection of endangered species, severe erosion, and the constant state of change of the land due to storm damage.[53]

Florida's *Bert J. Harris, Jr. Private Property Rights Protection Act* [54] ("Harris" Act) is intended to grant landowners more rights than they have under the Constitution, entitling them to compensation for regulation that they can prove, based upon appraisals and other information, constitutes an "*inordinate* burden" on an existing use or a vested right.[55] This standard is not

47. Glisson v. Alachua County, 558 So. 2d 1030 (Fla. 1st DCA 1990), *rev. denied*, 570 So.2d 1304 (Fla. 1990); Lee County v Morales, 557 So. 2d 652, 655-656 (Fla. 2d DCA 1990) (rezoning not a taking unless no beneficial and reasonable uses remain).

48. Smith v. City of Clearwater, 383 So. 2d. 681, 688-89 (Fla. 2d DCA 1980); Friedland v. Hollywood, 130 So. 2d 306 (Fla. 4th DCA 1961).

49. Glisson v. Alachua County, 558 So. 2d 1030 (Fla. 1st DCA 1990), *rev. denied*, 570 So. 2d 1304 (Fla. 1990).

50. *Id.* at 1037-38.

51. Lee County v Morales, 557 So. 2d 652 (Fla. 2d DCA 1990).

52. *Id.* at 653-54.

53. *Id.* at 653-56.

54. FLA. STAT. § 70.001 (2014).

55. FLA. STAT. § 70.001(2) (2014), 70.001(3)(e), FLA. STAT. (2014).

well defined[56] and no appeals court has found a Harris Act violation, but they have rejected several.[57]

A *Harris Act* claim based on an allegation of infringement of vested rights was rejected in *City of Jacksonville v. Coffield,*[58] where the Court ruled that the Act does not grant landowners any greater "vested" rights than they have under existing judicial doctrine. Coffield had contracted to buy land to develop adjacent to a public road which would abut an existing development. Prior to the purchase, an application had been made to have the roadway closed and abandoned, and the petition remained unresolved when Coffield closed on the land. Subsequently, the road closure and abandonment was completed, effectively preventing the proposed development due to a lack of vehicular access. Coffield's *Harris Act* suit was rejected because his intent to subdivide was not an actual, present use or activity, as required to support a vested right, but instead a business decision to buy the land with knowledge of the potential road closure. Thus, he had no valid claim that the city had unlawfully interfered with an existing right or created an inordinate burden.[59]

In *Palm Beach Polo v. Village of Wellington,* 918 So. 2d 988, 990 (Fla. 4th DCA 2006), a *Harris Act* claim based upon the enforcement of a floodplain preservation and restoration plan was rejected because the plaintiff had purchased the land subject to the plan, which had been agreed – to by the prior owner as a condition of development approval for another property.[60] Thus, the new owner never possessed an "existing use" on which to base a claim.

Nothing in the *Harris Act* prevents a local government from maintaining or adopting land use policies and development standards as necessary to protect the community from the adverse

---

56. Susan Trevarthen, Columns: City, County and local Government Law:" Advising the Client Regarding Protection of Property Rights: Harris Act and Inverse Condemnation Claims, 78 FLA. BAR J. 61, 62 (2004); Grosso and Hartsell, *Old McDonald Still Has a Farm: Agricultural Property Rights After the Veto of S.B. 1712*, FLA. BAR. J. Mar., 2005, Volume 79, No. 3; Ruppert, Grimm & Candiotti, Sea-Level Rise Adaptation and the Bert J. Harris, Jr., Private Property Rights Protection Act, https://www.flseagrant.org/wp-content/uploads/2012/03/Ruppert_BH-Act_article.pdf (The substantive standard of "inordinate burden" in the Act remains difficult to interpret as little reported case law addresses the term.").

57. M&H Profit, Inc. v. Panama City, 28 So. 3d 71 (Fla. 1st DCA 2009); Holmes v. Marion County, 960 So. 2d. 828 (Fla. 5th DCA 2007); Jacksonville v. Coffield, 18 So. 3d 589 (Fla. 1st DCA 2009).

58. City of Jacksonville v. Harold Coffield and Windsong Place, LLC., 18 So. 3d 589 (Fla. 1st DCA 2009).

59. *Id.* at 598. For an additional discussion of this case, see Ruppert, Grimm & Candiotti, Sea-Level Rise Adaptation and the Bert J. Harris, Jr., Private Property Rights Protection Act, https://www.flseagrant.org/wp-content/uploads/2012/03/Ruppert_BH-Act_article.pdf (at 18-21).

60. *Id.* at 995.

effects of sea level rise and storm surge. Significant commentary exists explaining the broad latitude the Act continues to allow local governments to react to ever - changing circumstances and amend their comprehensive plans, so long as the change does not "inordinately burden" a landowner.[61] A local government should not fail to protect its citizens because of vague, speculative or abstract fears about the *Harris Act*.

3. Non-Development or Extractive Uses

A key aspect of property rights law that can be under-utilized by government officials and staff concerned about the potential "takings" implications of regulatory and planning decisions is that development or intrusive uses (for example extraction) can be completely prohibited and the landowner still left with economically viable (or, in Florida non-inordinately burdensome) uses.

In *Beyer v. City of Marathon*, Florida's Third District Court of Appeals rejected a property rights claim, ruling that a strict land use plan (which prohibited any development but allowed camping), enacted 30 years after the plaintiff had purchased an uninhabited nine – acre island bird rookery in the Florida Keys, allowed a reasonable economic use of the property in the absence of any previously acquired vested right to any other, more profitable, use. The Beyers had no investment-backed expectations to development given their lack of any effort on their part to develop the land after they bought the land.[62]

H. Post-Disaster Rebuilding Policies: Non-Conforming Uses & Property Rights

When a local government land use plan or zoning code is revised, slightly or substantially, the new standard generally applies to future, not existing development, which is typically grandfathered, or vested, either legislatively or judicially, from having to meet the new standard. Existing construction and land uses are called "non-conforming uses", which typically are allowed

61. *See generally*, Susan Trevarthen, *Columns: City, County and local Government Law:" Advising the Client Regarding Protection of Property Rights: Harris Act and Inverse Condemnation Claims*, 78 FLA. BAR J. 61, 62 (2004); Grosso and Hartsell, *Old McDonald Still Has a Farm: Agricultural Property Rights After the Veto of S.B. 1712*, FLA. BAR. J. Mar., 2005, Volume 79, No. 3.

62. Beyer v. City of Marathon, 37 So. 3d 932 (Fla. 3d DCA 2013).

to remain in place.[63] A key question for resiliency planning is whether to require new or re-construction to comply with revised regulations (including significantly, new use or density/intensity restrictions) when a building is demolished or substantially damaged. The existence of uses that currently do not conform to newly-enacted standards designed to respond to climate/ sea – level rise mitigation and resiliency requirements should not generally be an obstacle to the enactment of those standards. They do not make existing structures illegal, but may be essential to ensuring the resiliency of the land upon which they are built and of the structures themselves.

The greater the delay in adopting such regulations, the less effective they will be, as more structures will have been built prior to their enactment. To the extent, however, that modern science and engineering are revealing the current inappropriateness of so many prior building locations, intensities and standards, responsible planning and development policy must require non-conforming uses to comply with modern sea level rise – appropriate standards after they are demolished or substantially damaged.[64]

A responsible and appropriate approach for local ordinances that change the extent, location or manner of construction and uses allowed in a given area is thus to vest non-conforming uses from having to comply with the new requirements unless and until they are abandoned or substantially destroyed. Local ordinances could then prohibit the complete re-building to the extent inconsistent with current standards. Where the zoning change was substantial enough relative to any specific landowner to raise a potentially valid property rights violation, [65] the code could authorize a variance procedure that, depending on the nature and purpose of the regulatory requirement, either authorizes a deviation from the standard to the extent necessary

63. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013). *Id*. at 86. (citation omitted).

64. This is often defined as having sustained 25%, or 50% or more damage. For example, when damage to a building exceeds 50% of a structure's pre-damage value, the National Flood Insurance Program conditions on rebuilding. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at page 88. (citation omitted).

65. For example, unless some alternative economically viable use is allowed, a complete prohibition on rebuilding, unless either necessary to prevent a nuisance under state common law, will be deemed a "taking". *See, e.g.*, Lucas v. South Carolina Coastal Council, 505 U.S. 1003 (1992) (holding that the preclusion of all economically viable uses resulted in a takings violation.

to avoid a property rights, or provides another form of relief, such as acquisition of fee simple or an easement.[66]

Local governments can address climate change and sea level rise impacts in their land use – zoning or their post-disaster mitigation plans. Particular emphasis should be placed on limiting post-disaster rebuilding on repetitive loss properties.

I. Water –Dependency Land Use Requirements

The critical nature of the basic land use decision about vulnerable coastal (and other) areas, and the compelling nature of the competing demands for use in the coastal zone, suggests the adoption of a "water dependency" requirement, such as that found in federal wetlands permitting law[67], and in some states,[68] for land use and zoning designations in vulnerable areas.

J. Buffer, and Open Space and Setback Requirements

Adequate coastal setbacks are a particularly important strategy in terms of reacting to both the physical and ecological challenges created by seal level rise and storm surge. Agencies can require new development and redevelopment in vulnerable areas to maintain setbacks or buffers from delineated water level or habitat boundary lines, to allow for natural storage of flood waters, prevent exacerbating flooding impacts on adjacent properties, provide natural protection, and allow upland migration of beaches,

---

66. The legal justifications for variances, and the threshold criteria for determination of a "taking", are closely related. An administrative provision authorizing variances from prohibitory regulations, to the extent necessary to allow some reasonable use of private property, can avoid inverse condemnation of individual parcels as part of a comprehensive regulatory approach. *See e.g.*, Askew v. Gables-by-the-Sea, Inc., 333 So. 2d. 56 (Fla. 1st DCA 1976).

67. Under the federal Clean Water Act, a Section 404 wetland permit will not be granted if a practicable alternative exists, and there is a rebuttable presumption that practicable alternatives are available for projects that are not water- dependent. A water-dependent project is one that "requires access or proximity to or siting within the special aquatic site [which includes wetlands,] in question to fulfill its basic purpose." 40 C.F.R. §§ 230.5, 230.10(a)(3).

68. New Jersey's state policy for adapting to sea-level rise shares similarities with various policies including the Wetlands act of 1970, prohibiting development in tidal wetlands unless the development is water dependent and no prudent alternative exists. Coastal Sensitivity at 206-207. New Jersey's state plan gives local government the final say on development, however a statewide vision of growth management is provided. *Id.* at 207. The state discourages development in land that contains valuable ecosystems, including coastal wetlands. Effectively allowing opportunities for wetlands to migrate inland as the sea level rises. *Id.*

wetlands and other habitats. Setbacks help reduce repetitive economic loss, make coastal structures safer, allow for landward habitat migration, and avoid the need for coastal armoring and the associated damage to beaches, which is particularly important in states like Florida that depend on beach tourism.[69] Local coastal building restrictions are not preempted by the statute requiring a permit from the Florida Department of Environmental Protection for construction, such as a dune rehabilitation project, within the state – defined coastal construction zone.[70]

Setbacks, open space and similar requirements do not generally "take" the subject portion of the private property of which they are a part. Courts determine whether a taking has occurred by viewing the end result of the regulation on the property "as a whole," and not some distinct segment thereof.[71]

1. Real Estate Sale Disclosures

Florida law requires a seller of land partially or totally seaward of the coastal construction control line (CCCL) to provide a written notice to the buyer with the following statement:

> "The property being purchased may be subject to coastal erosion and to federal, state, or local regulations that govern coastal property, including the delineation of the coastal construction control line, rigid coastal protection structures, beach nourishment, and the protection of marine turtles. Additional information can be obtained from the Florida Department of Environmental Protection, including whether there are significant erosion conditions associated with the shoreline of the property being purchased."[72]

---

69. Columbia Center for Climate Change Law Columbia Law School (October 2013), at page 44 (citations omitted).

70. GLA & Asocs. v. City of Boca Raton, 855 So. 2d 278 (Fla. 4th DCA 2003).

71. DEP v. Schindler, 604 So. 2d 565, 568 (Fla. 2d DCA 1992).

72. "Unless otherwise waived in writing by the purchaser, at or prior to the closing of any transaction where an interest in real property located either partially or totally seaward of the coastal construction control line as defined in s. 161.053 is being transferred, the seller shall provide to the purchaser an affidavit, or a survey meeting the requirements of chapter 472, delineating the location of the coastal construction control line on the property being transferred." FLA. STAT. § 161.57(3) (2014). However, "A seller's failure to deliver the disclosure, affidavit, or survey required by this section does not impair the enforceability of the sale and purchase contract by either party, create any right of rescission by the purchaser, or impair the title to any such real property conveyed by the seller to the purchaser." FLA. STAT. § 161.57 (4) (2014).

Property sellers must also provide an affidavit or property survey with an aerial view of the property showing where the CCCL lies, unless the buyer waives this requirement. The statute, however, precludes the buyer from rescinding or challenging the enforceability of the contract if the seller fails to comply with this requirement.[73] An analysis of compliance with this Act has found it to be largely ineffective in creating awareness on the part of prospective buyers about hazards and coastal permitting requirements impacting the property.[74]

K. Protecting Current & Future Wetlands Through Comprehensive Planning

City and county comprehensive plans must include a Conservation Element to address several issues of direct relevance to climate and sea level rise mitigation and adaptation. First, the element must identify rivers, bays, lakes, wetlands, estuarine marshes, ground waters, and springs, floodplains, areas known to have experienced soil erosion, and recreationally and commercially important fish or shellfish, wildlife, and marine habitats, and vegetative communities.[75]

Local plans must include a Conservation Element that identifies rivers, bays, lakes, wetlands, estuarine marshes, ground waters, and springs, floodplains, areas with known soil erosion problems, and recreationally and commercially important fish or shellfish, wildlife, and marine habitats, and vegetative communities.[76] They must protect air quality, the quality and quantity of current and projected water sources, including natural groundwater recharge areas, wellhead protection areas, and surface waters, and waters that flow into estuaries or the ocean, provide for the emergency conservation of water sources, protect minerals, soils, and native vegetative communities from destruction, protect fisheries, wildlife, wildlife habitat, and marine habitat and restrict activities known to adversely affect the survival of endangered and threatened wildlife, coordinate with adjacent local governments to protect unique vegetative communities located within more than one local jurisdiction, designate environmentally sensitive lands for protection, protect

---

73. *Id.*

74. *Florida's Coastal Hazards Disclosure Law: Property Owner Perceptions of the Physical and Regulatory Environment,* University of Florida, Levin College of Law (July 2012). *Id* at vi.

75. FLA. STAT. § 163.3177 (6)(d)(1) (2014).

76. FLA. STAT § 163.3177 (6)(d)1 (2014); FLA. STAT. § 163.3177 (6)(d)(1) (2014).

and conserve wetlands, and directs future land uses that are incompatible with the protection and conservation of wetlands and wetland functions away from wetlands.[77] "The type, intensity or density, extent, distribution, and location of allowable land uses and the types, values, functions, sizes, conditions, and locations of wetlands are… factors that shall be considered when directing incompatible land uses away from wetlands. Land uses shall be distributed in a manner that minimizes the effect and impact on wetlands."[78]

These requirements clearly correlate strongly with climate and sea level rise impacts, and are powerful mandates to make land use decisions that are completely consistent with the current and future realities of climate change and sea level rise. Policies meeting these requirements, based upon community-specific data and analysis concerning climate and sea level rise impacts, would tend to allow only that development which, by its nature, has to be located along the coast or other vulnerable areas, which is inherently suitable to the location given projected land and water elevations and infrastructure availability, and which poses no threat to adjacent uses.

1. Urban Sprawl & Rural Lands

It would be a mistake to respond to the limitations on development along the coast and other flood-prone areas by recklessly developing higher and dryer interior lands. The need to preserve biodiversity and habitat migration,[79] the water and carbon storage functions and other economic and social values of natural areas and open space, and the food-producing functions of farmland, and of protecting the public from the costly extension of infrastructure and services and the inefficient use of land and energy is even greater in the face of climate change and sea level

77. FLA. STAT § 163.3177(6)(d)2 (2014); FLA. STAT. § 163.3177 (6)(d)(2) (2014).

78. FLA. STAT § 163.3177(6)(d)2 (2014); FLA. STAT. § 163.3177 (6)(d)(2)(k) (2014).

79. "States are also beginning to anticipate the need to accommodate wildlife in human adaptation. In June 2008, the Western Governors' Association established the Western Wildlife Habitat Council. Among other duties, the Council is tasked to "[c]oordinate and implement steps that foster establishment of a 'Decisional Support System' (DSS) with each state," including "[p]rioritization of the process for identifying wildlife corridors and crucial habitats, and taking steps accordingly to support adaptation to climate change." The Council is also working "to establish policies that ensure information from state-led Decisional Support Systems is considered early in planning and decision-making processes, whether federal, tribal, state or local, in order to preserve these sensitive landscapes through avoidance, minimization, and mitigation." Robin Kundis Craig, *Stationarity is Dead – Long Live Transformation: Five Principles for Climate Change Adaptation*, 34 HARV. ENVTL. L. REV. 9, 56 (2010). (citations omitted).

rise. Florida must respect the finite "carrying capacity" of its land and water resources.[80]

Florida law requires local governments to maintain policies discouraging urban sprawl and the attendant conversion of natural lands to pavement (which increases greenhouse gas emissions), and increase in vehicular miles travelled. The analysis required for determining whether plan amendments discourage urban sprawl involves several factors that can significantly impact a community's mitigation of climate change impacts, including whether the plan amendment:

> I. Promotes, allows, or designates … substantial areas of the jurisdiction to develop as low-intensity, low-density, or single-use development or uses.
> II. Promotes, allows, or designates significant amounts of urban development to occur in rural areas at substantial distances from existing urban areas while not using undeveloped lands that are available and suitable for development….
> ***
> IV. Fails to adequately protect and conserve natural resources, such as wetlands, floodplains, native vegetation, environmentally sensitive areas, natural groundwater aquifer recharge areas, lakes, rivers, shorelines, beaches, bays, estuarine systems, and other significant natural systems.
> V. Fails to adequately protect adjacent agricultural areas and activities … and dormant, unique, and prime farmlands and soils.
> VI. Fails to maximize use of existing public facilities and services.
> ***
> VIII. Allows for land use patterns or timing which disproportionately increase the cost in time, money, and energy of providing and maintaining facilities and services, including roads, potable water, sanitary sewer, stormwater management, law enforcement, education, health care, fire and emergency response, and general government….
> ***

80. *See* above for a discussion of carrying capacity- based development limits.

> X. Discourages or inhibits infill development or the redevelopment of existing neighborhoods and communities.
> XI. Fails to encourage a functional mix of uses.
> ***
> XIII. Results in the loss of significant amounts of functional open space."[81]

The law also creates an incentive for developments that are allowed in undeveloped, including agricultural, areas, to incorporate climate- friendly development standards, including:

> 1. No adverse impacts on natural resources and ecosystems;
> 2. Efficient and cost-effective provision of public infrastructure and services;
> 3. Walkable and connected communities, and compact development and a mix of uses at densities and intensities that support a range of housing choices and a multimodal transportation system, including pedestrian, bicycle, and transit;
> 4. Conservation of water and energy[82];
> 5. Preservation of agriculture and unique, and prime farmlands and soils;
> 6. Preservation of open space and natural lands;
> 7. A balance of residential and nonresidential land uses;
> 8. Innovative development patterns such as transit-oriented developments or new towns.[83]

L. Coastal Management

There are 35 statutorily - designated coastal counties that include 169 municipalities, and each is required to develop and

---

81. FLA. STAT. § 163.3177 (6)(a)(9) (2014).

82. "Up to three-quarters of the energy used to produce electricity is lost as escaped heat at the point of generation, in transmission to the point of use, or because of energy-inefficient home sizes and building construction. Our single-family homes use disproportionate amounts of energy and waste much of it." John R. Nolon, *Regulatory Takings And Property Rights Confront Sea Level Rise: How Do They Roll?*, 21 WIDENER L. J. 735, 739 (2012). (citing ABB INC., ENERGY EFFICIENCY IN THE POWER GRID 2–3 (2007) and Reid Ewing & Fang Rong, *The Impact of Urban Form on U.S. Energy Use*, 19 HOUSING POL'Y DEBATE 1, 20 (2008) (finding that households living in single-family units use 54 percent more energy from space heating and 26 percent more energy for space cooling than households living in multi-family units).

83. FLA. STAT. § 163.3164(51) (2014) & § 163.3177 (6)(a)(9) (2014).

adopt a Coastal Element as part of its comprehensive plan.[84] The law requires strong policies governing coastal development and infrastructure decisions. Plans that exacerbate Florida's contributions to climate change or reduce its resiliency violate state law.

The law "recognizes there is significant interest in the resources of the coastal zone of the state. Further, the Legislature recognizes that, in the event of a natural disaster, the state may provide financial assistance to local governments for the reconstruction of roads, sewer systems, and other public facilities. Local government comprehensive plans must restrict development activities that would damage or destroy coastal resources, and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster."[85]

Comprehensive plans for coastal communities must:

> 1. Maintain, restore, and enhance the overall quality of the coastal zone environment, including, but not limited to, its amenities and aesthetic values.
> 2. Preserve the continued existence of viable populations of all species of wildlife and marine life.
> 3. Protect the orderly and balanced utilization and preservation, consistent with sound conservation principles, of all living and nonliving coastal zone resources.
> 4. Avoid irreversible and irretrievable loss of coastal zone resources.
> 5. Use ecological planning principles and assumptions in the determination of the suitability of permitted development.
> 6. Limit public expenditures that subsidize development in coastal high-hazard areas.
> 7. Protect human life against the effects of natural disasters.[86]

Plans must map "areas subject to coastal flooding… and other areas of special concern" and analyze "the environmental, socioeconomic, and fiscal impact of development and redevelopment proposed … with required infrastructure to support this development or redevelopment, on the natural … resources

84. *See* FLA. STAT. § 163.3177(6)(g) (2014), § 163.3178 (2)(d), § 373.4211; § 380.24.
85. FLA. STAT. § 163.3178 (1) (2014). (emphasis added).
86. FLA. STAT. § 163.3177 (6)(g) (2014).

of the coast and the plans and principles to be used to control development and redevelopment to eliminate or mitigate the adverse impacts on coastal wetlands; living marine resources; barrier islands, including beach and dune systems; unique wildlife habitat; historical and archaeological sites; and other fragile coastal resources."[87]

Next, plans must include provisions that govern development, and which:

> D. [o]utlines principles for hazard mitigation and protection of human life against the effects of natural disaster, including population evacuation[88], which take into consideration the capability to safely evacuate the density of coastal population proposed in the future land use plan element in the event of an impending natural disaster.
> E. … protect[s] existing beach and dune systems from human-induced erosion and … restor[es] altered beach and dune systems.
> F. [included a] redevelopment component which outlines the principles which shall be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise.
> G. … identifies public access to beach and shoreline areas and addresses the need for water-dependent and water-related facilities, including marinas, along shoreline areas. Such component must … preserve recreational and commercial working waterfronts ….
> H. Designat[es] coastal high-hazard areas and the criteria for mitigation for a comprehensive plan amendment in a coastal high-hazard area ….
> ***
> J. … mitigate[s] the threat to human life and to control proposed development and redevelopment in order to protect the coastal environment and give consideration to cumulative impacts."[89]

87. FLA. STAT. § 163.3178 (2)(a)-(b) (2014).

88. The Act requires that land use amendments maintain or lower evacuation times, with one authorized method being a requirement that developers contribute money or land sufficient to meet the hurricane shelter and transportation needs reasonably attributable to the development. FLA. STAT. § 163.3178 (8) (2014).

89. FLA. STAT. § 163.3178(2) (2014).

The Act also requires each county to identify and prioritize coastal properties for acquisition by the state, based on criteria "which, in addition to recognizing pristine coastal properties and coastal properties of significant or important environmental sensitivity, recognize hazard mitigation, beach access, beach management…, and other policies necessary for effective coastal management."[90]

1. Hurricane Evacuation and Public Safety

The hurricane evacuation/public safety requirements may be particularly important as a matter of public policy and relative to the legal defensibility of cautious limits on coastal development. Local governments are required to designate Coastal High Hazard Areas[91] (CHHA)[92]. Comprehensive plans must provide a mitigation plan that requires developers to contribute resources to hurricane shelters and evacuation capabilities if their projects would result in higher population concentrations within the CHHA.[93] Land use amendments must maintain or lower established evacuation times, with one authorized method being a requirement that developers contribute money or land sufficient to meet the hurricane shelter and transportation needs reasonably attributable to the development.[94]

Compliance with these requirements, in conjunction with those for use of the best available professionally accepted data and analysis, require that comprehensive plan amendments

---

90. FLA. STAT. § 163.3178(7) (2014). *See also* FLA. STAT. § 380.21(4) (2014). (Recognizing the "great potential" of land acquisition to support the state's coastal zone management efforts.")

91. The statute defines the CHHA as "the area below the elevation of the category 1 storm surge line as established by the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model." FLA. STAT. § 163.3178(2)(h), (2014).

92. FLA. STAT. §163.3178(2)(h) (2014).

93. FLA. STAT. § 163.3178(8)(a)(3) (2014).

94. FLA. STAT. § 163.3178(8) (2014), stating that a "proposed comprehensive plan amendment shall be … in compliance with state coastal high-hazard provisions if: [1] The adopted level of service for out-of-county hurricane evacuation is maintained for a category 5 storm event as measured on the Saffir-Simpson scale; or [2] A 12-hour evacuation time to shelter is maintained for a category 5 storm event … and shelter space reasonably expected to accommodate the residents of the development contemplated by…[the] amendment is available; or [3]Appropriate mitigation is provided that will satisfy subparagraph 1. or subparagraph 2. Appropriate mitigation shall include, without limitation, payment of money, contribution of land, and construction of hurricane shelters and transportation facilities.

(b) For those local governments that have not established a level of service for out-of-county hurricane evacuation by July 1, 2008, …the level of service shall be no greater than 16 hours for a category 5 storm event as measured on the Saffir-Simpson scale.".

impacting residential density allowances in coastal zones be based upon the existing and increasing science projecting an increase in the frequency and intensity of storm – surges and hurricanes.[95]

M. Adaptation Action Areas

1. Priority Planning Area Overlay Zones Generally

Because the most effective regulatory decisions, and those most capable of passing political and judicial scrutiny, are place – specific, local ordinances should be avoid a "one size fits all" approach and establish standards for land use and development that are tailored to specific areas defined by their level of contribution or vulnerability to climate and sea level rise impacts. Overlay Zones – an additional zoning designation applied over an existing land use or zoning district to add additional, typically stricter, standards for development) can avoid the problem of establishing general standards that are too strict in some areas and too weak in others. The boundaries of the overlay should be based upon a vulnerability assessment, using the best available data, to determine the geographic areas that should be subject to specific climate mitigation and resiliency land use and building standards, such as those areas that are susceptible to flooding and rising sea levels, and those that will be important for landward terrestrial and aquatic habitat migration. Florida's statutory authorization for the designation of local "Adaptation Action Areas"[96] is one example of a sea level rise adaptation tool available to local governments.

Florida law makes optional the designation by each coastal local government of an "adaptation action area"[97] for "low-lying

95. *See,* e.g., *National Water Program Strategy: Response to Climate Change* (US EPA Dec. 2012) at 73 (¶1); Jessica A. Bacher and Jeffrey P. LeJava, *Shifting Sands and Burden Shifting: Local Land Use Responses to Sea Level Rise in Light of Regulatory Takings Concerns* (Zoning & Planning Report Aug. 2012) at 2(¶¶3-4); *See also* CCSP COASTAL SENSITIVITY, at 21; *See also Sea Temperature Rise,*NAT'L GEOGRAPHIC SOC'Y, http:// ocean.nationalgeographic.com/ocean/critical-issues-sea-temperature-rise/ (last visited Apr. 1, 2012); *See also* IPCC SYNTHESIS REPORT, *supra* note 3, at 46; *See also* Thomas R. Knutson, *Global Warming and Hurricanes,* NAT'L OCEANOGRAPHIC & ATMOSPHERIC ADMIN. (Aug. 26, 2011), *available at* http://www.gfdl.noaa.gov/global-warming-and-hurricanes (emphasis omitted), (¶1); *See also* Nolon, *Regulatory Takings And Property Rights Confront Sea Level Rise: How Do They Roll?* 21 WIDENER L. J. 735, 742–43 (2012).

96. FLA. STAT. § 161. 3164(1) (2014).

97. FLA. STAT. § 163.3177(6)(g)(10), an adaptation action area is "a designation in the coastal management element of a local government's comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning." FLA. STAT. §

coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level."[98] The Act authorizes policies "to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, stormwater runoff, and related impacts of sea-level rise."[99] This statutory authorization for "optional" adaptation action area planning does not excuse non-compliance with the many mandatory requirements, described above, that preclude comprehensive plan amendments that are adverse to sea level rise and climate resiliency.

Because of site-specific variability of expected impacts throughout that part of any local jurisdiction that is subject to flooding and sea-level rise, local governments might wisely choose to adopt different strategies, for example, shoreline protection, managed relocation, or accommodation, for different zones within a designated AAA.[100]

A number of resources are available to local governments interested in implementing an AAA planning process. Florida's Land Planning Agency is engaged in providing technical support and guidance to local governments interested in implementing this provision.[101] The City of Fort Lauderdale is currently engaged in a pilot project that could be a model for other cities in Florida.[102]

163.3164(1) (2014). An adaptation action area may be designated "for those low-lying coastal zones that are experiencing coastal flooding due to extreme high tides and storm surge and are vulnerable to the impacts of rising sea level. Local governments that adopt an adaptation action area may consider policies within the coastal management element to improve resilience to coastal flooding resulting from high-tide events, storm surge, flash floods, storm water runoff, and related impacts of sea-level rise. Criteria for the adaptation action area may include, but need not be limited to, areas for which the land elevations are below, at, or near mean higher high water, which have a hydrologic connection to coastal waters, or which are designated as evacuation zones for storm surge." FLA. STAT. § 163.3177(6)(g)(10) (2014).

98. FLA. STAT. § 163.3177(6)(g)(10) (2014).

99. *Id.*

100. Krystal Macadangdang and Melissa Newmons, *Sea Level Rise Ready: Model Comprehensive Plan Goals, and Policies, to Address Sea level Rise Impacts in Florida*, at 6., *available at* https://www.flseagrant.org/wpcontent/uploads/2012/03/sea_level_rise_Cons. Clinic_2010_v.2.pdf. (This document includes several potentially useful recommendations for specific comprehensive plan goals and policies.).

101. Adaptation Planning (Adapting to Sea Level Change), *available at* http://www.floridajobs.org/community-planning-and-development/programs/technical-assistance/community-resiliency/adaptation-planning.

102. Innovative Pilot Projects, *available at* http://www.fortlauderdale.gov/departments-/public-works-/sustainability-division/climate-resiliency/innovative-pilot-projects.

N. Capital Improvements Element

Comprehensive plans must identify projects necessary to ensure that any adopted-level-of-service is achieved and maintained for the five-year period, include estimates of public facility costs, and identify each project as funded or unfunded and given a level of priority. The capital improvements program must reflect levels of service that can be "reasonably met" and must identify infrastructure needed to maintain that level of service standard.[103] The Act requires that local government comprehensive plans identify problems and needs relating to sanitary sewer, solid waste, drainage, potable water and natural groundwater recharge, as well as ways to provide this infrastructure and these services in the future. It also requires existing deficiencies to be corrected, infrastructure and service capacity to be extended or increased to meet future needs, conserve groundwater and natural drainage functions.[104] The task of identifying the infrastructure needed to maintain level of service standards may increasingly require an understanding of how sea level rise will impact the provision of services such as storm water management, water treatment and supply, roads, and other facilities. Plan amendments that impact these issues, will need to analyze how and when future infrastructure services may be susceptible to future climate change impacts, and the adoption of policies designed to adequately respond to the deficiency.

Local governments are also authorized to require builders to pay their "proportionate share" of any transportation improvements required to serve their developments.[105] Local governments may choose to avoid providing any subsidy to construct or rebuild roads in vulnerable areas, and require full funding from builders for roads required to serve development in such locations.

1. Conservation Element

Comprehensive Plans must include a Conservation Element for the "conservation, use, and protection of natural resources ... including factors that affect energy conservation.[106] This element must analyze and address development approvals relative to several issues of direct relevance to climate and sea level rise

103. FLA. STAT. § 163.3177(3)(a) (2014).
104. FLA. STAT. § 163.3177(6)(c) 2 (2014).
105. FLA. STAT. § 163.3180(5)(h) (2014).
106. FLA. STAT. § 163.3177(6)(d) (2014).

mitigation and adaptation. The element must identify rivers, bays, lakes, wetlands, estuarine marshes, groundwaters, and springs, floodplains, areas known to have experienced soil erosion problems, and recreationally and commercially important fish or shellfish, wildlife, and marine habitats, and vegetative communities.[107] The element must adopt development standards which:

> A. Protect air quality,[108] the quality and quantity of current and projected water sources, including natural groundwater recharge areas, wellhead protection areas, and surface waters, and waters that flow into estuaries or the ocean.
> ***
> C. Provides for the emergency conservation of water sources in accordance with the plans of the regional water management district.
> D. Protect minerals, soils, and native vegetative communities from destruction.
> E. Protect fisheries, wildlife, wildlife habitat, and marine habitat and restrict activities known to adversely affect the survival of endangered and threatened wildlife.
> ***
> G. Coordinates with adjacent local governments to protect unique vegetative communities located within more than one local jurisdiction.
> H. Designates environmentally sensitive lands for protection.
> I. Manages hazardous waste to protect natural resources.
> J. Protects and conserves wetlands and the natural functions of wetlands.
> K. Directs future land uses that are incompatible with the protection and conservation of wetlands and wetland functions away from wetlands.[109]

Florida law supports the most effective, fundamentally important governmental response to the challenges of climate change and sea level rise – ensuring that where we build and live

107. FLA. STAT. § 163.3177(6)(d)(1) (2014).

108. *Id.* The mandate to protect air quality surely supports stringent restrictions on greenhouse gas emitting land uses, such as suburban sprawl.

109. FLA. STAT. § 163.3177(6)(d)(2) (2014).

affirmatively reduces our contribution to climate change and promotes or adaptability to sea level rise. The next section of this article will briefly explore the use of environmental permitting laws to decrease climate change impact and increase sea level rise resiliency.[110]

III. FLORIDA ENVIRONMENTAL PERMITTING LAWS

The state's environmental permitting decisions play a major role in climate and sea level rise resiliency. The next Section discusses the role of selected Florida permitting laws in reducing and responding to climate and sea level rise impacts.

A. Beach Renourishment & Coastal Permitting Laws

"Two key parts of Florida's response to storms and erosion have become placing sand on the beaches and armoring."[111] Both should be used only rarely in the future.

1. Shoreline Armoring

The significant construction and expense of seawalls,[112] coupled with the potential liabilities resulting from their erosional and flooding impacts on other lands, are substantial economic disadvantages. Their negative ecological impacts, including the

---

110. For additional discussion of state-mandated or authorized local government planning requirements and approaches, see Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at pages 27–40, and 96–97; *Titus*, Rolling Easements, (EPA 2011), at 46; Grannis, *Adaptation Tool Kit: Sea Level Rise and Coastal Land* Use, Georgetown Climate Center (Oct. 2011), at 18-24. (*available at* http://www.georgetownclimate.org/files/Adaptation_Tool_Kit_SLR.pdf).

111. *See generally* Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65 (2008).

112. Seawalls can cost $10-20 million per mile to construct, and $1.5 million per mile every 20–25 miles to maintain. Power Point Presentation, Robert E. Deyle, Dept of Urban and Regional Planning, FSU (Presented at Fla. Sea Grant Apr. 19 2013); Deyle_Adaptive_Response_Planning_to_Sea_Level_Rise_FlaSeaGrantWkshop_08-09-12_edited. *See also* Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at page 65 (reporting that shore armoring can cost from $500 to $7,600 per linear foot to construct, and has substantial maintenance, replacement and construction time costs). Jessica Grannis, *Adaptation Tool Kit: Sea Level Rise and Coastal Land* Use, Georgetown Climate Center (Oct. 2011), at 6 *available at* http://www.georgetownclimate.org/files/Adaptation_Tool_Kit_SLR.pdf (armoring is expensive, adversely impacts the environmental, neighboring properties, and encourages development in vulnerable areas, while non-structural solutions over the long term perform better in each of these areas).

preclusion of beach habitat and of beach and wetland migration,[113] also suggest that their use should probably be limited to special cases, where "critical"[114] and unmovable community assets are at risk.

"Florida has a long history of confronting shoreline migration where permanent structures have been built near the beach. Early confrontations led to armoring, often resulting in loss of the beach, its ecosystem and the human values associated with the beach."[115] Armoring beaches exacerbates erosion.[116] Jetties and inlet dredging "exacerbate erosion by depriving beaches on the downdrift side of sand that they would have received absent the jetty and dredging."[117] As explained by Ruppert:

> Armoring exacerbates erosion for two reasons. First, armoring locks up sand behind it, keeping sand from the dunes from sloughing down and becoming part of the active movement of sand on the beach. Since the system cannot get sand from behind the armoring, the system needs to take more sand from someplace else. Second, during a significant erosion event, much sand that is carried offshore is eventually redeposited on the beach through natural processes, but armoring can interfere with this process and prevent sand from naturally accumulating again on the beach.[118]

---

113. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at page 63–67. *See also*, Power Point Presentation, Robert E. Deyle, Dept of Urban and Regional Planning, FSU (Presented at Fla. Sea Grant Apr. 19 2013) Deyle_Adaptive_Response_Planning_to_Sea_Level_Rise_FlaSeaGrantWkshop_08-09-12_edited.

114. *See* Grannis, *Zoning for Sea Level Rise*, *supra* note 18, at 3.

115. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 70 (2008); After Hurricane Dennis, beachfront landowners in Florida's Panhandle, convinced their local governments to allow the construction of 26 miles of seawalls to protect their properties from further damage. This is a traditional problem in Florida. Grannis, *Adaptation Tool Kit: Sea Level Rise and Coastal Land* Use, Georgetown Climate Center (Oct. 2011), at 5–6.

116. For example, it has been reported that scientists in Hawaii have determined that "the reliance upon shoreline armoring to mitigate coastal erosion on Oahu has, instead, produced widespread beach erosion resulting in beach narrowing and loss." Armoring resulted in the loss of over 9 kilometers of sandy beach, 8% of the original 72 miles of sandy beach on Oahu, with 95% of that loss occurring in areas with coastal armoring. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at 49.

117. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, at 67 (2008).

118. *Id.* at 70 (fn. 44).

Ruppert's analysis of Florida coastal permitting files in the mid – 2000's revealed that the state's coastal permitting agency:

> Acknowledges that armoring contributes to erosion on adjacent, non-armored property. In fact, in many instances, part of the justification for armoring on one property is the erosive effect of neighboring armoring. In some more recent permits, the [state coastal permitting agency has] taken a new approach: assume no adverse impacts to neighboring property from armoring-induced erosion if the return walls for the armoring are five feet or more from the adjacent property.[119]

Ruppert also explains that:

> Three causes of beach migration have been identified: inlets, wave action/storms, and [sea level rise].
> The available responses to beach migration usually … include no action, protection (through armoring and nourishment), and relocation away from the shoreline. The no-action alternative has very seldom been used in Florida as it results in human development falling into the sea – a lose/lose situation both for the property owner and the beach-dune system that is then littered with the remains. Protection through armoring has been successful in protecting human structures in many instances, but continued shoreline migration up to the armoring leads to loss of the beach, its ecosystem functions, and human benefits such as tourism. Foreseeable loss of the beach due to armoring also may represent a failure of the State of Florida to fulfill its duty to protect the public's interest in the beach via the public trust doctrine. Furthermore, loss of beaches would have severe economic consequences for Florida because of reduced tourism. Relocation of development away from the shoreline would avoid loss of the beach and protect species and ecosystems

119. *Id.* at 70.

> dependent on the beach, but this strategy has only rarely been used…."[120]

State and local governments should maintain or adopt permitting programs that prohibit or strongly discourage hard shoreline armoring, and require soft-armoring techniques [121] where feasible to lessen the environmental impacts of hard shoreline armoring.[122] Among other states, Maine, Massachusetts and Rhode Island have statutes restricting shoreline armoring for the purpose of allowing shoreline natural resources to migrate.[123] Strong local land use restrictions on development in rural land and important natural geological and ecological resources can allow wetlands to migrate inland as sea level rises.[124] Beyond these examples:

> South Carolina enacted a statute that prohibits the construction of erosion control structures seaward of a setback line. The State's Office of Ocean and Coastal Resource Management has acknowledged that "[i]t must be accepted that regardless of attempts to forestall the process, the Atlantic Ocean, as a result of sea level rise and periodic storms, is ultimately going to force those who have built too near the beachfront to retreat." South Carolina's legislature has declared that the dynamic beach/dune system along its coast is "extremely important" because it "generates approximately two-thirds of [the state's] annual tourism industry revenue" and functions as "a storm barrier," a "habitat for numerous species," and a "natural healthy environment for the citizens" of the state. Recognizing that "development ... has been [unwisely] sited too close to the system," the legislature deemed it in "both the public and private interests to protect the system from this unwise development." Because armoring provides a "false

120. *Id.* at 71.

121. Soft armoring "can imitate natural systems, interact with the local ecosystem, and adapt to changes in the environment." Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at 63.

122. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at 63–65.

123. CCSP, Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region 320 (2009). pp. *Id.* at 207.

124. *Id.*

> sense of security," South Carolina chose to "severely restrict the use of hard erosion control devices to armor the beach/dune system and to encourage the replacement of hard erosion control devices with soft technologies." The state prohibits most erosion control structures seaward of a setback line based on the crest of the dune system.
> Since 2000, Maryland… has encouraged policies for responding to a [sea level] rise of two to three feet in this century." In 2007, the governor established the Commission on Climate Change, which released a Climate Action Plan in 2008. The plan provides an "Adaptation and Response Toolbox" designed to "[g]ive state and local governments the right tools to anticipate and plan for sea-level rise and climate change." Additionally, the state's Living Shorelines program presents management options that "allow for natural coastal processes to remain through the strategic placement of plants, stone, sand fill, and other structural and organic materials."[125]

On the federal level, among the changes that the U.S. Army Corps of Engineers might choose to consider is the repeal of its current administrative rule allowance for a Nationwide Permit for bulkheads and other erosion control structures,[126] which allows the construction of structures that can preclude the necessary landward migration of wetlands that follows sea level rise.[127] Conversely, no Nationwide Permit (which does not require an individual permit application but instead the simple filing of a notice that a landowner is undertaking construction as authorized by the General Permit) is available for the installation of "soft" shoreline protection measures, which do require an individual permit application under the Clean Water Act.[128]

---

125. John R. Nolon, *Regulatory Takings and Property Rights Confront Sea Level Rise: How do They Roll?* 21 Widener L.J. 735, 766–67 (2012).

126. *See* 61 Federal Register 65.873, 65.915 (Dec. 13, 1996). See 61 Federal Register 65, 873, 65–915 (Dec. 13, 1996) (reissuing Nationwide Wetland Permit 13, Bank Stabilization activities necessary for erosion prevention). *See also*, Reissuance of Nationwide Permits, 72 Federal Register 11.1108-09, 11183 (Mar. 12, 2007) (reissuing Nationwide Permit 13 and explaining that construction of erosion control structures along coastal shores is authorized). *See also* Nationwide Permits 3 (Maintenance), 31 (Maintenance of Existing Flood Control Facilities), and 45 (Repair of Uplands Damaged by Discrete Events). 72 Federal Register 11092-11198 (Mar. 12, 2007).

127. CCSP, Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region 167 (2009).

128. *Id.* at 169.

B. Florida Coastal Construction Permitting

1. The Coastal Construction Control Line (CCCL) Permitting Program

Florida law recognizes that coastal areas play an important role in protecting the ecology and public health, safety, and welfare, and that the coastal areas form the first line of defense for the mainland against storms and hurricanes:

> [t]he beaches in this state and the coastal barrier dunes adjacent to such beaches, by their nature, are subject to frequent and severe fluctuations and represent one of the most valuable natural resources of Florida and that it is in the public interest to preserve and protect them from imprudent construction which can jeopardize the stability of the beach-dune system, accelerate erosion, provide inadequate protection to upland structures, endanger adjacent properties, or interfere with public beach access.[129]

To that end, Florida has established a Coastal Construction Control Line (CCCL) on a county-by-county basis along its sandy beaches[130] that marks the extent of "the beach-dune system subject to severe fluctuations based on a 100-year storm surge, storm waves, or other predictable weather conditions."[131] The CCCL is recorded in each county's public records.[132]

Many and perhaps most of the CCCLs previously established for Florida's coastal counties are very outdated, and have not been updated to reflect currently available information about the future status of the beach.[133] Re-calculations of the line by the state are

---

129. FLA. STAT. § 161.053(1)(a) (2014).

130. *Id.*

131. FLA. STAT. § 161.053(1)(a) (2014). The statute also authorizes the department to "establish a segment or segments of a coastal construction control line further landward than the impact zone of a 100-year storm surge, provided such segment or segments do not extend beyond the landward toe of the coastal barrier dune structure that intercepts the 100-year storm surge. Such segment or segments shall not be established if adequate dune protection is provided by a state-approved dune management plan." *Id.*

132. FLA. STAT. § 161.053(2)(a) (2014).

133. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, at 83 (2008).

discretionary and not mandatory.[134] Florida has not incorporated sea level rise into the CCCL program.[135]

The law does not prohibit construction seaward of the CCCL, but requires that any construction seaward of the CCCL be permitted by the state under the Act's siting and design standards. [136] A permit is required prior to any coastal construction [137] upon sovereign lands below (seaward of) the mean high-water line. [138] The focus of the permitting review is on "major habitable structures"[139] and coastal armoring structures as these "have the greatest direct effect on beach management options in the face of shoreline migration."[140] Local governments may establish their own coastal zoning and building codes.[141]

2. Criteria for Issuing Permit

On their face, the standards for permit issuance appear to support permitting decisions that preclude construction that would exacerbate sea level rise, erosion, and related impacts along Florida's coast. Permits decision must consider " the potential effects of the location of such structures or activities, including potential cumulative effects … upon such beach-dune system or coastal inlet, which …clearly justify such permit". [142] Applicants must show that impacts have been "minimized" and that the construction will not result in a "significant adverse impact". [143]

---

134. FLA. STAT. § 161.053(2)(a) (2014); *See also* Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65 (2008).

135. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y. J. 65 (2008).

136. "Special siting and design considerations shall be necessary seaward of established coastal construction control lines to ensure the protection of the beach-dune system, proposed or existing structures, and adjacent properties and the preservation of public beach access." FLA. STAT. § 161.053 (1)(a) (2014).

137. "Coastal construction" includes "any work or activity which is likely to have a material physical effect on existing coastal conditions or natural shore and inlet processes." FLA. STAT. § 161.021(6) (2014). This definition is construed broadly. For example, in *Town of Palm Beach v. Dept. of Nat. Resources*, 577 So. 2d 1383 (Fla. 4th DCA 1991), the court ruled that "coastal construction" included trimming and maintenance of native salt resistant vegetation, and thus required a permit.

138. FLA. STAT. § 161.041(1) (2014).

139. These include structures such as houses, condominiums, multi-family dwellings, restaurants, and hotels. FLA. ADMIN. CODE r. 62B-33.002(60)(c)2.

140. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65 (2008).

141. FLA. STAT. § 161.053(3) (2014); In GLA & Associates, Inc. v. City of Boca Raton, 855 So.2d 278, 282-283 (Fla. 4th DCA 2003), the Court upheld a stricter local ordinance that was not approved by the state.

142. FLA. STAT. §§ 161.041(b)(2) &(a)(3); FLA. STAT. § 161.053(4)(a)(3) (2014).

143. FLA. ADMIN. CODE ANN. r. 62B-33.005(2).

This requires a showing that the permit is "clearly justified by demonstrating that all … requirements … are met, including:

> A. The construction will not result in removal or destruction of native vegetation which will either destabilize a frontal, primary, or significant dune or cause a significant adverse impact to the beach and dune system due to increased erosion by wind or water;
> B. The construction will not result in removal or disturbance of in situ sandy soils of the beach and dune system to such a degree that a significant adverse impact to the beach and dune system would result from either reducing the existing ability of the system to resist erosion during a storm or lowering existing levels of storm protection to upland properties and structures;
> C. The construction will not direct discharges of water or other fluids in a seaward direction and in a manner that would result in significant adverse impacts. […] construction shall be designed so as to minimize erosion induced surface water runoff within the beach and dune system and to prevent additional seaward or off-site discharges associated with a coastal storm event.
> D. The construction will not result in the net excavation of the in situ sandy soils seaward of the control line or 50-foot setback;
> E. The construction will not cause an increase in structure-induced scour of such magnitude during a storm that the structure-induced scour would result in a significant adverse impact;
> F. The construction will minimize the po-tential for wind and waterborne missiles during a storm;
> G. The activity will not interfere with public access… and
> H. The construction will not cause a sig-nificant adverse impact to marine turtles, or the coastal system."[144]

The state is required to ensure that any biological or environmental monitoring conditions included in a permit

144. FLA. ADMIN. CODE r. 62B-33.005(4) (a-h) (2014).

regarding beach activities are based on clearly defined scientific principles.[145]

The protection of sea turtles is an explicit consideration. The state is required to comply with the Marine Turtle Protection Act when considering applications for coastal permits.[146] Absent an emergency, construction may not be allowed during the marine turtle-nesting season if such construction will result in a significant adverse impact.[147] The DEP must recommend permit denial if the proposed project would result in an unauthorized "take" under the federal Endangered Species Act.[148] Also, the state may condition the timing, nature, and sequence of construction to protect sea turtles and native salt-resistant vegetation and endangered plant communities.[149] In *Leto v. Florida Department of Environmental Protection,*[150] construction permits were denied because, among other reasons, "the structure, as designed, failed to adequately protect local marine turtles."[151] Ruppert has criticized the lack of an express limitation on the *location* of structures in order to protect sea turtles, as well as what he characterizes as a priority for protecting man-made structures, as opposed to the natural functions beaches.[152]

In *Surfrider Foundation, Inc. v. Town of Palm Beach*, [153] the state denied [154] a coastal permit for a proposed beach renourishment project based on several findings of adverse environmental impact to the nearshore coastal resources. [155] The Department of Environmental Protection's Final Order of denial explained that the Legislature's declaration that beach restoration and nourishment projects are in the public

145. FLA. STAT. § 161.041(4) (2014).

146. FLA. STAT. § 379.2431(1)(f) (2014).

147. FLA. ADMIN. CODE r. 62B-33.0051(3) (2014).

148. FLA. STAT. §§ 379.2431 (1)(d) & (h) (2014).

149. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 75 (2008). *See also* FLA. STAT. § 379.2431(1)(g) (2014). If the applicant is applying for a permit for beach restoration, and has an active marine turtle relocation program, however, DEP may not restrict the timing of the project. *Id.*

150. Leto v. Florida Department of Environmental Protection, 824 So. 2d 283 (Fla. 4th DCA 2002).

151. *Id.* at 284.

152. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 84–88 (2008).

153. Surfrider Foundation, Inc. v. Town of Palm Beach, 2009 WL 2507236 (Fla. Dept. Env. Prot. 2009).

154. *See id.* at *28. The agency had initially approved the permit but the approval was challenged by environmental organizations that prevailed in a formal administrative hearing. *See id.* at *1–2.

155. *Id.* at *2–7, *28, 61, 64–127.

interest[156] does not exempt such projects from the regulatory laws[157], and such projects are to be denied coastal permitting approval if they fail to meet the statutory *public interest* and *cumulative impact* standards.[158]

3. Thirty-Year Erosion Projection Line

The CCCL is not a line of prohibition, but Florida has also established a 30-year Erosion Projection Line (EPL), which prohibits the construction of "non-shore-protection structures" in the area projected to be "seaward of the seasonal high-water line within 30 years."[159] The prohibition does not apply to shore protection structures, piers, other minor structures, intake/ discharge structures, or, notably, qualifying single-family homes.[160] Such homes are exempt if (1) the parcel was platted or subdivided prior to 1985; (2) the owner does not own another parcel adjacent to or landward of the parcel; (3) the house will be landward of the frontal dune; and (4) the structure will be as far landward as practicable.[161] This exemption may be a significant limitation on the meaningful impact of the law.

The 30-year erosion is a site – specific line projection of where the mean high water line will be in thirty years.[162] It is based upon historical measurements of shoreline change, and does not account for likely future movements of the beach due to sea level rise, thus sometimes resulting in the placement of the line at the current water line.[163] The state must specifically consider existing beach nourishment projects or those projects for which funding has been secured and permits have issued.[164] The 30-year line is always seaward of the CCCL.[165]

The 30 year time period has been criticized as too short, relative to the useful life of many structures and too much infrastructure, for its failure to protect dynamic dune systems

156. FLA. STAT, § 161.088 (2008).
157. *Id.* at *16.
158. *Id.* at *15–19.
159. FLA. STAT. § 161.053(5)(b) (2014).
160. FLA. STAT. § 161.053(5)(b)-(c) (2014).
161. FLA. STAT. § 161.053(5)(c) (2014). Ruppert suggests that this exception "likely owes its existence to the U.S. Supreme Court case of *Lucas v. South Carolina Coastal Council*, 117 505 U.S. 1003 (1992)." Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J 65, at 82 (2008).
162. FLA. STAT. § 161.053(5) (b) (2014).
163. Ruppert, *supra* note 161, at 75. *See* FLA. ADMIN. CODE r. 62B-33.024 (1) and (2).
164. FLA. STAT. § 161.053(5)(d) (2014).
165. FLA. STAT. § 161.053(5)(b) (2014).

relative to the seasonal high water line (SHWL), for its exclusive basis in "historical" erosion rates (to the exclusion of future projected erosion rates resulting from sea level rise or recent coastal construction and armoring) and for its ambiguity on whether episodic storm erosion will be considered in establishing the line.[166] One of the state's closest observers of its coastal policies, has recommended that:

> The rules for the 30-yr. EPL should be modified to account for a much longer time frame such as 50-100 years and take into account the crucial importance of protecting the dune structure by siting structures behind the line of the projected location of a dune structure, location, if present, or a safe landward location instead of the seasonal high water line. The shoreline change rates should also account for sea level rise and should contain a "severe storm safety measure" on top of the average shoreline change rates to account for the inevitable hurricanes and tropical storms.

4. Rebuilding, Repairing and Relocating Existing Structures

The statute allows the issuance of a permit for repair or rebuilding of a major structure seaward of the thirty-year erosion protection line *within* the confines of an existing foundation.[167] Repair or rebuilding that expands the capacity of the structure beyond the thirty-year erosion protection line is strictly prohibited.[168] When reviewing an application to rebuild or relocate, the state must specifically consider changes in shoreline conditions, the availability of other locations for the structure, and design adequacy.[169] Alternatively, the state *may* issue a permit for a more landward relocation or rebuilding of a damaged or existing structure if the relocation or rebuilding would not cause further harm to the beach-dune system.[170]

166. Ruppert, *supra* note 161, at 75. *See* FLA. ADMIN. CODE r. 62B-33.024 (1) and (2).
167. FLA. STAT. § 161.053(12)(a) (2014).
168. FLA. STAT. § 161.053(12)(b). (2014).
169. FLA. STAT. § 161.053(12). (2014).
170. FLA. STAT. § 161.053(12)(a)(4) (2014).

5. Reasonably and Uniform Continuous Line of Construction

The Act allows for the construction of single-family habitable structures that do not advance "a reasonably continuous and uniform construction line":

> If in the immediate contiguous or adjacent area a number of existing structures have established a reasonably continuous and uniform construction line closer to the line of mean high water …, and if said existing structures have not been unduly affected by erosion, a proposed structure may be permitted along such line on written authorization from the department if such proposed structure complies with the Florida Building Code and the rules of the department"[171]

The DEP's implementing administrative rule states that, absent exceptional circumstances, applicants are entitled to a permit up to the line of construction:

> If in the immediate area a number of existing major structures have established a reasonably continuous and uniform construction line and if the existing structures have not been unduly affected by erosion, except [where the 30-year erosion projection applies], the Department shall issue a permit for the construction of a similar structure up to that line.[172]

The interpretive leeway available to the state in determining the location of such a line has been criticized because it "may effectively be advancing the line of construction seawards and more immediately into the path of harm and beach migration."[173] This allowance:

---

171. FLA. STAT. § 161.052(2)(b) (2014). The ambiguity of this provision has been criticized as allowing the state too much discretion to decide that existing homes which form the existing line of construction have not been affected by erosion to the extent that the construction of another home along the same line should be prohibited. Ruppert, SEA GRANT L. & POL'Y J, *supra* note 162 at 78–79.

172. FLA. ADMIN. CODE r. 62B-33.005(9) (2014). For a discussion of this provision, see Ruppert, SEA GRANT L. & POL'Y J., *supra* note 162, 78 (2008) (explaining that DEP has interpreted the "line of construction" provision to mean that, "absent exceptional circumstances, applicants are entitled to a permit up to the line of construction".).

173. Ruppert, SEA GRANT L. & POL'Y J., *supra* note 162 at 88.

> [p]romotes increased investment and proportionally greater difficulty in adjusting to future movements of the beach-dune system. Building to the line of construction may be the difference in changing an area from one where policies of moving back from the migrating shoreline would be adopted to one where the beach will be entirely lost along with its habitat, ecosystem, and all the recreational, esthetic, and spiritual benefits it provides us.

Application of the line of construction provision should be eliminated or … limited to the most densely developed areas, which are already likely to be protected in the short-term. However, even in such instances, development should be conditioned on recordation of deed restrictions limiting rebuilding of the property and requiring removal of any structures that interfere with the dynamic beach[174] In addition, if the provision is not eliminated, the most seaward buildings on a developed beach nourished by state funds should be assumed to be unduly affected by erosion since a developed beach typically must be "critically eroding" to receive state funds."[175]

6. Construction Landward of Existing Armoring

Construction landward of existing coastal armoring and seaward of the CCCL is exempt if it meets certain siting and design criteria. [176] This exemption has been criticized as inappropriate in light of sea level rise:

> The current exception to criteria for construction of major habitable structures landward of existing armoring makes no sense since it promotes development behind a structure that will not be capable of continuing to offer the level of protection required by the exception. In addition, the increase in investment in coastal development makes it increasingly difficult to relocate development to preserve a dynamic beach.[177]

---

174. *Id.*
175. *Id.* at 89.
176. FLA. STAT. § 161.053(2) (b)(1) (2014).
177. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 77 (2008).

7. Rebuilding of Damaged Structures

The statute exempts "any modification, maintenance, or repair of any existing structure within the limits of the existing foundation which does not require, involve, or include any additions to, or repair or modification of, the existing foundation of that structure." [178] Ruppert recommends that the law be changed to that rebuilding is:

> Rebuilding should be limited to 50% of the value of the structure and …limited to the original foundation and type of structure unless being relocated landward. The state should identify a zone (based on erosion rates and/or proximity to the mean high water line or the landward toe of dune, when present) seaward of which rebuilding would simply be prohibited or allowed only once with a permit condition that the property must have a recorded deed restriction to this effect. If this policy is not implemented, a similar policy would be for the state and local governments to begin a project whereby they purchase the rebuild rights from properties.[179]

C. Final Word on Coasta Development

Structures built to the standards required by this law, as opposed to those built prior to its enactment or under an exemption or grandfathering provision, fare significantly better in a storm.[180] This strongly suggests that Florida should repeal or limit the statutory permit exemptions.

Florida should strengthen the criteria for issuance of such permits, and adopt a policy of reducing the amount and coastal development in vulnerable areas. This approach would require

---

178. FLA. STAT. § 161.053(11)(a) (2014). Specifically excluded from this exemption are seawalls or other rigid coastal or shore protection structures and any additions or enclosures added, constructed, or installed below the first dwelling floor or lowest deck of the existing structure. *Id.*

179. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J. 65, 84 (2008).

180. Columbia Center for Climate Change Law Columbia Law School (Oct. 2013), at page 47 (reporting that the 1995 Hurricane Opal destroyed 56% of the impacted structures that had not been built under the Act's standards, but destroyed only .2% of the impacted structures that had been built pursuant to its requirements.).

placing the long – term fate of the state over the short-term desires of coastal landowners:

> Coastal property in Florida carries tremendous value. High property values and the wealth of many coastal property owners often translate into political connections for those interested in building along Florida's coast. Such political clout can translate into the ability of some to get permits. During research, numerous individuals familiar with the CCCL program asserted that enough political pressure can result in the issuance of almost any permit… The lack of clarity in how factors are weighed in making permit decisions may contribute significantly to the vulnerability of the permitting process to political influence. CCCL statutes and rules should be modified to clarify the standards and criteria and how they interact in making a determination of "no significant adverse impact." Modifications could include development of a matrix of different factors to consider for each permit. Each factor would be weighted and rated according to defined formulas with a minimum overall score necessary for issuance. There is also the possibility of setting a lowest possible score on one or more factors.[181]

D. Coastal Armoring

1. Introduction/Policy

The emphasis of Florida's law is on the protection of private structures and public infrastructure from damage or destruction caused by coastal erosion "[u]ntil such time as the state takes measures to reduce erosion on a regional basis."[182] To this end, the state is authorized to issue permits for construction of permanent or temporary rigid coastal armoring structures to protect private structures or public infrastructure that are "vulnerable to damage from frequent coastal storms".[183] The criteria otherwise applicable to coastal permits, govern these permits.[184]

181. Ruppert, SEA GRANT LAW& POL'Y J., *supra* note 162 at 88.
182. FLA. STAT. § 161.085(1) (2014).
183. FLA. STAT. § 161.085 (2)(a) (2014).
184. FLA. STAT. § 161.085(2) (2014).

2. Eligible Structures

"Armoring is allowed for private structures or public infrastructure that is "vulnerable to damage from frequent coastal storms." [185] Permits can be issued for immediate (present) installation, or made "contingent upon the occurrence of specified changes to the coastal system which would leave upland structures vulnerable to damage from frequent coastal storms."[186]

3. Permitting Criteria

"Armoring shall be sited and designed to minimize adverse impacts to the beach and dune system, marine turtles, native salt-tolerant vegetation, and existing upland and adjacent structures and to minimize interference with public beach access." [187] Construction can "not result in a significant adverse impact."[188] Armoring may not result in a complete loss of public beach access without providing alternative public beach access.[189]

4. Armoring Discouraged

Florida law *encourages* alternatives to armoring, such as foundation modification, structure relocation, or dune restoration.[190] Even where the permit requirements for coastal armoring have been met, a permit will not be issued if beach renourishment, beach restoration, sand transfer, or other project which would provide protection for the eligible structure has been permitted, funded, and scheduled to begin within nine

185. FLA. STAT. § 161.085 (2)(a) (2014).
186. FLA. STAT. §§ 161.085(2) (a-b) (2014).
187. FLA. ADMIN. CODE r. 62B-33.0051(2) (2014).
188. FLA. ADMIN. CODE r. 62B-33.0051(1)(a)(5) (2014).
189. FLA. ADMIN. CODE r. 62B-33.0051(1)(a)(4) (2014).
190. FLA. ADMIN. CODE r. 62B-33.0051(1) (2014). The Southeast Florida Regional Climate Action Plan recommends that local governments adopt a policy to "[c]oordinate 'living shorelines' objectives at regional scale to foster use of natural infrastructure (e.g. coral reefs, native vegetation and mangrove wetlands) instead of or in addition to grey infrastructure (e.g. bulkheads)." Southeast Florida Regional Climate Action Plan, supra note 17, at 33. (*available at* http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/regional-climate-action-plan-final-ada-compliant.pdf) (Last visited Mar. 22, 2015).

months.[191] Also, Florida's wetland permitting law discourages, and in some cases, prohibits, seawalls in estuaries and lagoons.[192]

It has been recommended that coastal development "permits for new or rebuilt major habitable structures … be conditioned on recording a deed restriction that the property will never be armored and that the structure will be removed at the property owner's expense if the structure ends up interfering with the active beach. This also puts the applicant on notice that future movement of the beach is at the risk of the property owner rather than the public or the species and ecosystem that depend on the beach. Without this fundamental limitation, [the state] would further guarantee the loss of our beaches to armoring every time it issued a permit for a major habitable structure. The prohibition on armoring for structures built pursuant to the program recognizes that such structures are built to not lock up the sand underneath them and interfere as little as possible with the beach-dune system."[193]

5. Permits for Gaps in Existing Armoring

Permits for present installations of coastal armoring may be issued where such installation is between and adjoins at both ends rigid coastal armoring structures, follows a continuous and uniform armoring line with existing coastal armoring structures, and is no more than 250 feet in length.[194] The new armoring must be installed no farther seaward than the existing armoring, avoid

191. FLA. ADMIN. CODE r. 62B-33.0051(1)(b) (2014).

192. FLA. STAT. § 373.414(5)(a) (2014) establishes legislative intent to "protect estuaries and lagoons from the damage created by construction of vertical seawalls and to encourage construction of environmentally desirable shore protection systems, such as riprap and gently sloping shorelines which are planted with suitable aquatic and wetland vegetation." To that end, the statute prohibits the issuance of permits for vertical seawalls except within ports, within marinas if needed to provide access to watercraft or serve public facilities, in existing manmade canals with existing vertical seawalls, and as needed for public utilities to provide service to the public. FLA. STAT. § 373.414 (5)(b) (2014). The statute generally requires allowable repairs of existing seawalls to be faced with, or replaced entirely with riprap. FLA. STAT. § 373.414 (5)(c) (2014).

193. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162 at 90. Also, under Kaua'i County, Hawaii's *Shoreline Setback and Coastal Protection Ordinance,* a structure that is, pursuant to a variance, built seaward of the setback line is ineligible for protection by shoreline hardening for the life of the structure. *Managed Coastal Retreat: A Handbook of Tools, Case Studies, and Lessons Learned*, Columbia Center for Climate Change Law, Columbia Law School (Oct. 2013), at pages 47-48 (citations omitted). "These provisions are meant to protect the island's beaches against the detrimental effects of coastal armoring and to prevent property owners from relying on coastal hardening to protect their developments." *Managed Coastal Retreat: A Handbook of Tools, Case Studies, and Lessons Learned*, Columbia Center for Climate Change Law, Columbia Law School (Oct. 2013), at page 48.

194. FLA. STAT. § 161.085(2)(c) (2014).

adverse impacts to turtles, and not exceed the highest level of protection provided by the existing walls.[195] This allowance has been criticized for allowing "gap" beaches that are the site of a "disproportionately large share of sea turtle nesting sites in heavily armored areas" to be seawalled, and for promoting new investment and construction landward of seawalls in vulnerable areas.[196]

6. Siting and Design Criteria

Armoring must generally be sited as far landward as practicable to minimize adverse impacts while still protecting the vulnerable structure.[197] If the armoring would interfere with public access to the beach, the applicant must provide alternate public access.[198] Armoring must be designed to provide reasonable protection to eligible structures, minimize adverse impacts (which includes impacts to sea turtles), and meet generally accepted engineering practice.[199]

7. Emergency Temporary Armoring

Permits for "emergency" coastal armoring may be issued if the state or a local government with jurisdiction declares a shoreline emergency. If a coastal storm causes erosion of the beach and dune system such that existing structures have either become damaged or vulnerable to damage from a future frequent coastal storm, the local or state government may take emergency protection measures to protect public infrastructure and private structures. Alternatively, upon declaring a shoreline emergency and providing notification to affected property owners and to the Department, the governmental entity may issue permits authorizing private property owners within the jurisdiction to protect their private structures.[200]

In an emergency, local governments are authorized to install or issue permits for emergency coastal armoring. If they do not, an applicant must obtain a permit from the state.[201] Protection of the beach-dune system, impacts on adjacent properties, preservation

195. FLA. ADMIN. CODE r. 62B-33.0051(1)(a) (2014).
196. SEA GRANT LAW& POL'Y J., Vol. 1, No. 1 (June, 2008).
197. FLA. ADMIN. CODE r. 62B-33.0051(2)(a) (2014).
198. FLA. ADMIN. CODE r. 62B-33.0051(2) (a) 5 (2014).
199. FLA. ADMIN. CODE r. 62B- 33.0051(2) (b) (2014).
200 FLA. STAT. §161.085(2)(3) (2014).
201 *Id.* § 161.085(3).

of public beach access, and protection of coastal vegetation, threatened or endangered species, and nesting marine turtles and their hatchlings must be "considered and incorporated" into emergency permits.[202]

Armoring constructed pursuant to the Act's "emergency" provisions "shall be temporary". Within sixty days after the emergency installation of the structure, the property owner shall remove the structure or submit a permit application to the DEP for a permanent rigid coastal armoring structure.[203] It has been observed, however, that temporary armoring, as well as unpermitted armoring required to seek an after-the-fact permit, tends to become permanent.[204]

8. Beach "Nourishment"

> The substantial damage to the Florida coastline precipitated by hurricanes and other storm events led the state to invest heavily in beach renourishment under the state law that gives it that authority. Florida has 1260 miles of coastland, comprising 825 miles of sand shoreline. Of those 825 miles, 485 are eroded and 388 are listed as "critically eroded," signifying that they are in need of restoration under the law.[205]
>
> Property owners often feel that any failure of state or local government to provide them with some sort of protection from migrating shores is unfair. Thus, beach nourishment has emerged as Florida's default policy for beach management because it offers protection to property, wildlife habitat, and the recreational value of beaches.[206]

Florida's Beach and Shore Preservation Act (BSPA) declares beach erosion "a serious menace to the economy and general welfare of the people and has advanced to emergency proportions."[207] The Legislature has found that "erosion of the beaches . . . is detrimental to tourism . . . further exposes the

---

202 *Id.*
203 *Id.* § 161.085(6).
204 Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162 at 91.
205. Nolon, *supra* note 12 at 743-44 (citations omitted).
206. *Id.*
207. FLA. STAT. § 161.088 (2014).

state's highly developed coastline to severe storm damage, and threatens beach-related jobs, which, if not stopped, may significantly reduce state sales tax revenues."[208] The Act declares "a necessary governmental responsibility to properly manage and protect Florida beaches fronting on the Atlantic Ocean, Gulf of Mexico, and Straits of Florida from erosion, including erosion caused by improvement, modification, or alteration of inlets."[209]

The Act authorizes beach "restoration and nourishment projects" pursuant to a funded beach management plan.[210] It defines beach and shore preservation to include "erosion control[,] . . . hurricane protection[,] . . . coastal flood control, shoreline and offshore rehabilitation, and regulation of work and activities likely to affect the physical condition of the beach or shore."[211] Beach restoration is "the placement of sand on an eroded beach for the purposes of restoring it."[212] Beach nourishment is "the maintenance of a restored beach by the replacement of sand."[213] A beach restoration and nourishment project must be (1) in a critically eroded shoreline, (2) consistent with the state's beach management plan, and (3) designed to reduce upland damage from altered inlets, coastal armoring, or existing development.[214]

The Florida Department of Environmental Protection (DEP) is responsible for identifying those beaches that are critically eroded, and for authorizing funding of up to 75% of actual costs for renourishment projects.[215] The Act requires DEP to develop a multi-year repair and maintenance strategy for erosion control, beach preservation, beach restoration, beach nourishment and storm and hurricane protection, which encourages regional approaches to ensure the geographic coordination and sequencing of prioritized projects, reduces equipment mobilization and demobilization costs; maximizes the infusion of beach-quality sand into the system; extends the life of beach nourishment projects and reduces the frequency of nourishment; and promotes inlet sand bypassing to replicate the natural flow of sand interrupted by improved, modified, or altered inlets and ports.[216]

---

208. *Id.* § 161.091(3).
209. *Id.* § 161.088.
210. *Id.*
211. *Id.* § 161.021(2).
212. *Id.* § 161.021(4).
213. *Id.* § 161.021(3).
214. *Id.* § 161.088; *see also* Nolon, *supra* note 12, at 745-746 (citations omitted).
215. FLA. STAT. § 161.101 (2014).
216. *Id.* § 161.091(1)-(2) (a)–(e).

The Act establishes a Beach Management Trust Fund to fund beach nourishment plans.[217] The criteria for prioritizing funding requests includes a project's long-term financial plan, its ability to enhance areas near sea turtle habitats, and the extent to which local/ regional sponsors agree to coordinate projects to save costs. Priority is given to funding the development, implementation, and administration of the state's beach management plan.[218]

As described by Ruppert in 2008, this program has developed:

> [A] long-range management plan for Florida's beaches. The plan implements active management strategies such as beach and dune restoration and nourishment, feeder beaches, inlet sand bypassing, and other actions to mitigate effects of erosion. Currently about half of Florida's 391.5 miles of critically eroded beaches are under active management. An increasingly significant portion of the strategic beach management plan focuses on the sand supply for beach nourishment. The plan also includes monitoring programs to evaluate management projects.[219]

9. The Problems With Beach Restoration and Renourishment

Explaining the historical broad support but emerging concerns being raised about beach renourishment in Florida, Ruppert writes:

> With a total of 140 beach nourishment projects, Florida has conducted the largest number of beach nourishment projects of all Gulf and Atlantic states in the United States. Nourishment has become the dominant beach policy management of Florida since the 1980s. Since then, nourishment has enjoyed substantial support from a broad array of interests. Recently, the wall of almost unanimous support for beach nourishment has begun to show cracks. Property owners whose property is being

217. *Id.* § 161.091.

218. *Id.* § 161.091(3).

219. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162 at 71. (explaining that the long-range management plan is in various documents divided up by regions of the state) (author's note: Those documents are now available at http://www.dep.state.fl.us/beaches/publications/ (Last visited Mar. 22, 2015).

> protected by beach nourishment have complained that nourishment violates their property rights, and environmental interests have increasingly voiced concern about the environmental impacts of beach nourishment.
>
> Concerns exist for impacts to sea turtles directly as well as to marine ecosystems generally. Nourishment has also been undermined by recent coastal storms in Florida. The 2004 and 2005 hurricanes both removed large amounts of nourished beach and gave rise to a flurry of nourishment activity. While some nourished beaches fared reasonably well, others were rapidly lost, leading to questions about the financial feasibility of such an approach. Financial issues with nourishment will only multiply as the energy costs for nourishment increase.
>
> Federal, state, and local governments contribute to nourishment as well as private parties in some cases. The federal government is estimated to have contributed about $680 million to nourishment in Florida through 2002, not including emergency funding after hurricanes for dune construction and not including the large amount of nourishment and federal funding provoked by the active hurricane seasons of 2004 and 2005. "Through the fiscal year 2006, over $582 million has been appropriated by the [Florida] Legislature for beach erosion control activities and hurricane recovery." Local governments also spend considerable funds for beach nourishment, and even private parties spend substantial funds trying to keep sand on the beach. Even assuming available energy and funding for nourishment, Florida is running short of sand. South Florida has run out of readily available sources of beach-quality sand, giving rise to talk of going as far as the Bahamas in search of sand.[220]

220. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162, at 73; *see also* FLA. STAT. § 161.144 (2014), which declares that the Florida Legislature recognizes that the sand resources are an "exhaustible resource."

Beach renourishment has significant drawbacks, including cost,[221] longterm availability, and adverse environmental impacts, among others.[222] Beach nourishment also results in significant destruction of nearshore ecological resources, such as corals and sea grass beds.[223]

Under Florida law, the same agency that identifies critically eroded beaches in need of taxpayer-funded restoration, under a law intended to protect their economic values, is also charged with regulating this activity, under a law designed to protect the ecology of coastal natural resources. It has been observed that agency practice has allowed non-compliant permit applications for homes within the Coastal Construction Control Line to remain pending long enough for a beach renourishment project to be completed, which then were eligible for permits based upon the existence of the renourished beach.[224] This dichotomy between the economic and political influences in support of beach renourishment project and the resulting adverse physical and ecological impacts leaves the state without a coherent policy on the subject. As one commentator has observed: As one commentator has observed:

> The objectives pursued by beach renourishment projects in Florida are to repair the damaging effects of sea level rise and storm surges and to halt the progress of inundation. With nearly 60 percent of the state's sandy shoreline suffering erosion, one wonders how economically sustainable this objective is. If 'thoughtful precaution' suggests that coastal states plan, on average, for a one-meter rise in sea level by the end of the century, one wonders how environmentally sustainable such an objective is.[225]

---

221. Renourishemnt can cost $4.3 million per mile and require repetition every two to six years. Deyle_Adaptive_Response_Planning_to_Sea_Level_Rise_FlaSeaGrantWkshop_08-09-12_edited (on file with author).

222. *See* Coastal Sensitivity at p. 149, 183.

223. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note, at 72.

224. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162, at 87.

225. Nolon, *supra* note 12, at 752 (citations omitted). Professor Nolon explains that "[o]ther states have adopted a different posture, attempting to manage a qualified retreat as inundation, erosion, and avulsion occur. Some state statutes permit the acquisition of public access easements through eminent domain, voluntary sales, or donations of conservation easements. Others prohibit building bulkheads, seawalls, residences, or commercial buildings in vulnerable areas or require that structures be removed as the high tide line moves landward. Common law principles can be interpreted to create public easements to access a portion of littoral property as the sea level rises and erosion and avulsion occur. These techniques, in the aggregate, have been termed "rolling easements."

In at least one case, DEP's issuance of a coastal permit authorizing a renourishment project to the town of Palm Beach, was successfully challenged, and the permit ultimately denied.[226]

10. Final Analysis: Florida's Coastal Management Program

Writing in 2008, Ruppert characterized Florida's overall approach in this way:

> Unfortunately, Florida's regulatory system for coastal construction continues to allow rapid development in coastal areas. Private and public investment in infrastructure, new development in undeveloped areas, and increases in the density of existing development all continue to erode the reasonable management options for future responses to beach migration and [sea level rise]. For example, current and near-future development patterns and approvals often determine whether beaches that might have been allowed to migrate naturally at a lesser cost will instead need to be protected at far greater cost.

Florida's statewide process for permitting construction near beaches should be modified to serve as an immediate first line of defense in maintaining an array of options for responding to [sea level rise] and concomitant shoreline migration.

Despite increasing recognition of its problems and limitations, beach nourishment remains Florida's reaction to coastal migration. Many factors gathering on the horizon may come together to limit the future usefulness of nourishment as a way to satisfy the desire for both a dynamic beach and coastal development next to the beach. Thus, it behooves us to maintain maximum management options for addressing beach migration and [sea level rise] by minimizing new development near the beach. . . .[227]

Ruppert further explains that:

> While Florida's current CCCL permitting program has increased the safety of new structures built in

---

Id. at 752–53 (citations omitted).

226. Surfrider Foundation, Inc. v. Town of Palm Beach, 2009 WL 2507236 (Fla. Dept. Env. Prot. 2009).

227. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162, at 73–74.

> the coastal zone, it fails to adequately protect the ability of the beach to migrate, fails to account for [sea level rise], and encourages increased development due to beach nourishment[228]. These failings have resulted in increased development subject to both immediate coastal hazards and the long-term problems of [sea level rise].
>
> Increasing beach erosion and [sea level rise] bring into question the feasibility of Florida's current focus on beach nourishment as a means to avoid the conflict between development and beach migration. The . . . granting of erosion credits for nourishment projects and failure to account for [sea level rise] in current permitting decisions foster development that will require protection from beach migration and [sea level rise] or will be lost to the sea. In areas which are already densely developed, the incremental cost of such new development may be minimal as the area would likely already have been prioritized for shore protection from [sea level rise] anyway. However, new development in previously undeveloped areas and increasing density in sparsely developed areas is adding rapidly to the amount of land on Florida's coast that will receive priority for protection . . . .
>
> Protection from [sea level rise] in the future will exact far higher costs than we have yet seen from shore protection efforts in Florida. As the speed and magnitude of [sea level rise] increase, nourishment alone will likely not be able to keep up due to cost and lack of sand as well as the increasing energy required for nourishment. Once nourishment is no longer feasible in a developed area, two choices will remain: either armor and lose the beach or move human development back from the beach and allow the shoreline to migrate. Such choices will be very difficult as the losses from either option will be tremendous. . . . .
>
> [R]eforms to Florida's . . . permitting program for coastal construction are also urgently needed

228. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162, at 97. *See* also the discussion of how seawalls can provide a false sense of security to landward owners, causing them to make questionable investments in improvements, at Columbia Center for Climate Change Law Columbia Law School (October 2013), at page 67-68.

> to discourage new coastal construction or redevelopment in areas vulnerable to likely [sea level rise] and to ensure that redevelopment or new development that is permitted be conditioned to prevent its inclusion as justification for future armoring and loss of our beaches. Anything less amounts to the State of Florida abdicating its public trust duty to manage and preserve Florida's beaches for the good of all its citizens.[229]

E. Florida's Environmental Resource Permitting Program

Florida, like most states, maintains its own wetland-permitting program. Florida's "Environmental Resource Permit" law and its implementing regulations provide ample authority for the state's Department of Environmental Protection and five water management districts to strictly limit the granting of permits authorizing new wetland destruction that would decrease Florida's ability to absorb greenhouse gas emissions, attenuate floods, and allow for wetland habitat migration. Florida's law—combined wetland and storm water permitting—protect water resources from development impacts by precluding permitting authorization for ecological harm, which goes beyond a point of acceptability.[230]

1. The Environmental Resource Permit Public Interest Standard

The statutory "Public Interest" criteria for approval of Environmental Resource Permits, emphasizes the protection of natural systems, requires cumulative and secondary impact analysis and mitigation for unavoidable impacts, and requires projects to be not contrary to or clearly in the public interest, protecting the state against unacceptable impacts to wetlands and other water resources. On their face, these criteria support a determination that a proposed project is not in the public interest if, based on a preponderance of the evidence, its adverse environmental impacts exceed those which the affected ecosystem can handle.

---

229. Ruppert, SEA GRANT LAW& POL'Y J, *supra* note 162, at 97-98.
230. FLA. STAT. § 373.016 (2014).

Section 373.414(1), of the Florida Statutes, provides:

> As part of an applicant's demonstration that an activity . . . will not be harmful to the water resources or will not be inconsistent with the overall objectives of the district . . . the applicant [shall] provide reasonable assurance that state water quality standards . . . will not be violated and reasonable assurance that such activity . . . is not contrary to the public interest. However, if such an activity significantly degrades or is within Outstanding Florida Water . . . the applicant must provide reasonable assurance that the proposed activity will be clearly in the public interest.
> In determining whether an activity . . . is not contrary to the public interest or is clearly in the public interest, the [permitting agency] shall consider and balance the following criteria:
> 1. Whether the activity will adversely affect the public health, safety, or welfare or the property of others;
> 2. Whether the activity will adversely affect the conservation of fish and wildlife, including endangered or threatened species, or their habitats;
> 3. Whether the activity will adversely affect navigation or the flow of water or cause harmful erosion or shoaling;
> 4. Whether the activity will adversely affect the fishing or recreational values or marine productivity in the vicinity of the activity;
> 5. Whether the activity will be of a temporary or permanent nature;
> 6. Whether the activity will adversely affect or will enhance significant historical and archaeological resources . . . ; and
> 7. The current condition and relative value of functions being performed by areas affected by the proposed activity.[231]

The law supports a denial of a wetland permit in cases of damage to the environment that cannot be mitigated.[232]

---

231. FLA. STAT. § 373.414(1)(a) (2014).
232. *See* Grosso, *supra* note 32, at 718-24.

2. Minimization and Avoidance

State rules emphasize requiring a permit applicant to make all practicable modifications to the development proposal that would avoid or eliminate wetland impacts.[233] These requirements that try to avoid wetland impacts altogether, and then require full mitigation to offset unavoidable impacts are policy decisions to ensure the sustainability of wetland and water resources. But not all wetland impacts can be approved on the strength of mitigation, For example, the Rules of the South Florida Water Management District state, "[p]rotection of wetlands and other surface waters is preferred to destruction and mitigation due to the temporal l oss of ecological value and uncertainty regarding the ability to recreate certain functions associated with these features."[234]

3. Mitigation Requirements to "Offset" Wetland Impacts

Florida's statutory approach to wetland mitigation, if implemented correctly by permitting agencies, fosters the sustainability of wetlands and water resources. If an application does not meet the public interest test, the agency "shall consider measures proposed by or acceptable to the applicant to mitigate adverse effects that may be caused by regulated activity."[235] Mitigation must offset the adverse impacts to the specific functions of the specific wetlands being impacted.[236] The mitigation must address the negative factors in the public interest test that tipped the balance against the public interest.[237]

In *Florida Power Corp. v. Florida Department of Environmental Regulation*,[238] the Department held that, although there is no absolute "no net loss" standard for mitigation, the avoidance or minimization of net loss is an important guiding

233. Rule 40E-4.301(3), Florida Administrative Code, requires an applicant to explore and implement practicable design modifications to eliminate and reduce wetland and surface water impacts. See Orlando Cent. Park, *Inc. v. S. Fla. Water Mgmt. Dist.*, 9 F.A.L.R. 1305, 1319–20, 1330 (DOAH 1987); *Dibbs v. Dep't of Envtl. Prot.*, Case No. 94-509 (DOAH Apr. 4, 1995); *VQH Dev., Inc.*, DOAH Case No. 92-7456, 15 F.A.L.R. 3407, 3411 (Dep't of Envtl. Prot. Final Order, Aug. 13, 1993) aff'd 642 So. 2d 755 (Fla. 2d Dist. Ct. App. 1994); *Cnty. Line Coal., Inc. v. Sw. Fla. Water Mgmt. Dist.*, Case No. 98-2927 (DOAH 1999); see, e.g., Rule 62-312.060, F.A.C., § 4.2.1.2, B.O.R.

234. BASIS OF REVIEW FOR ENVIRONMENTAL RESOURCES PERMIT APPLICATIONS, SFWMD § 4.3.

235. FLA. STAT. § 373.414(1)(b) (2014).

236. *Id.*; Southwest Florida Management District v. Charlotte County, 774 So. 2d 903, 910-12 (Fla. 2d DCA 2001).

237. *See* generally McCormick v. City of Jacksonville, 12 F.A.L.R. 960 (DER 1990).

238. 92 E.R. F.A.L.R. 56 (Fla. Dep't of Envtl. Regulation Final Order Apr. 11, 1992).

principle of mitigation.[239] Since mitigation by preservation necessarily results in loss of jurisdictional wetlands, the Department generally accepts preservation mitigation only after on-site wetland creation and/or enhancement is shown to be not feasible or not sufficient to tip the public interest balancing test "scales" in favor of permit issuance.[240]

Florida law recognizes that some wetlands cannot be mitigated because they are particularly unique or provide functions that cannot be re-created. As Section 4.3 of the South Florida Water Management District's Basis of Review makes clear:

> Protection of wetlands and other surface waters is preferred to destruction and mitigation due to the temporal loss of ecological value and uncertainty regarding the ability to recreate certain functions associated with these features. Mitigation will be approved only after the applicant has complied with the requirements . . . regarding practicable modifications to eliminate or reduce adverse impacts. . . . . In certain cases, mitigation cannot offset impacts sufficiently to yield a permittable project. Such cases often include activities which significantly degrade Outstanding Florida Waters, adversely impact habitat for listed species, or adversely impact those wetlands or other surface waters not likely to be successfully recreated.[241]

Where mitigation will not offset the expected adverse impacts, the state must reject a mitigation plan and deny a requested permit.[242]

---

239. *Id.* at 20 (remanding for determination on the adequacy of proposed mitigation).

240. *Id.* at 17.

241. BASIS OF REVIEW FOR ENVIRONMENTAL RESOURCES PERMIT APPLICATIONS, SFWMD § 4.3.

242. *See* Brown v. So. Fla. Water Mgmt. Dist., DOAH Case No. 04-000476 (Final Order Sept. 13, 2004) (denying an ERP where it was determined that the proposed mitigation for a dock project would not adequately offset impacts to a listed species of seagrass); *Charlotte Cnty. v. IMC-Phosphates Co.*, 4 E.R. F.A.L.R. 20 (Final Order Sept. 15, 2003) (denying a permit where the applicant failed to demonstrate that its mitigation proposal would maintain or improve the natural functions of the diverse types of wetland systems present at the site prior to commencement of the project); *Kramer v. Dep't of Envtl. Prot.*, 2 E.R. F.A.L.R. 225, 236 (Final Order Feb. 26, 2002) (denying an ERP where the mitigation plan was found inadequate and "experimental").

4. Cumulative Impact Analysis

The requirement that permitting agencies "consider the cumulative impacts" of requested ERPs [243] provides ample authority to limit or deny permit applications that would compromise the capacity of wetland ecosystems to function and survive based upon an analysis of known global warming and sea level rise science. The cumulative impact analysis requirement is a sustainability requirement for the wetland, water, and related resources that would be impacted by proposed development projects.[244] The law requires that, in deciding whether to grant or deny a wetland permit, agencies "shall consider the cumulative impacts upon surface water and wetlands . . . within the same drainage basin . . . of":

> 1. The activity for which the permit is sought.
> 2. Projects which are existing or activities regulated under this part which are under construction or projects for which permits or [jurisdictional] determinations . . . have been sought.
> 3. Activities which are under review, approved, or vested . . . or other [wetland-regulated] activities . . . which may reasonably be expected to be located within surface waters or wetlands . . . in the same drainage basin . . . based upon the comprehensive plans . . . of the local governments having jurisdiction over the activities, or applicable land use restrictions and regulations.[245]

Reported cases support the view that this consideration of cumulative impacts is designed to prevent an end result for the impacted environment that exceeds its tolerance thresholds.[246]

F. Florida's Consumptive Water Use Permitting Decisions

The legal standards governing Consumptive Water Use permit application by Florida's five water management districts are as explicit in their intent to protect the public's water as they are

243. FLA. STAT. § 373.414(8)(a) (2014).

244. Sierra Club v. St. Johns River Water Mgmt., 816 So. 2d 687, 688 (Fla. 5th DCA. 2002).

245. FLA. STAT. § 373.414(8)(a) (2014).

246. Grosso, *supra* note 32, at 723-24.

broad in the discretion granted to the agencies. An executive branch with the commitment and political will to prioritize the protection of the Florida's water over the provision of cheap, virtually unconditional water to new development would enjoy ample legal authority to do so. The standard for the approval of a Consumptive (Water) Use Permit unambiguously precludes the allowance of harm to the state's water resources by requiring permitting agencies to "assure" that permitted water uses are "not harmful to the water resources of the area."[247]

To qualify for a permit, an applicant must prove, among other things, that the proposed use is a "[r]easonable-beneficial" [248] one and is "consistent with the public interest." [249] In making these decisions, permitting agencies "shall take into account cumulative impacts on water resources and manage those resources in a manner to ensure their sustainability."[250] Also, it is state policy "[t]o promote the conservation, replenishment, recapture, enhancement, development, and proper utilization of surface and groundwater"[251] and "[t]o promote the availability of sufficient water for all existing and *future* reasonable-beneficial uses and natural systems."[252]

By its plain meaning, the statute requires current water permitting decisions to consider the future water use scenarios projected to occur over the duration of the permit as a result of sea level rise and climate changes. Beyond that, given the reality of how the issuance of these permits creates a powerful political expectation (that has almost never failed to materialize) that the permit will be renewed at the same or higher level of withdrawal, the state's water management districts should provide the public with a considerable margin for error and not grant permits now for levels of withdrawal that are likely to be unsustainable in the

247. FLA. STAT. § 373.219(1) (2014) (emphasis added).

248. *Id.* § 373.019(16) (defining a "[r]easonable-beneficial use" as a "use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest").

249. *Id.* § 373.223(1).

250. *Id.* § 373.016(2).

251. *Id.* § 373.016(3)(b).

252. *Id.* § 373.016(3)(d) (emphasis added).

future.[253] Of particular importance is the need to prevent the exacerbation of Florida's existing saltwater intrusion problem.[254] As noted by Verchick and Hall:

> [T]he Southwest Florida Water Management District (SFWMD) and the Florida Department of Environmental Protection are fighting climate-induced saltwater intrusion into the aquifers of southwest Florida by invoking a variety of preexisting legal authorities. These include the SFWMD's regulatory powers to limit water-use permits and encourage better land-use planning, its ability to promote municipal water conservation through financial assistance, and its authority under the Florida Water Resource Act to protect surface water and reduce groundwater demand.[255]

Verchick and Hall also comment that, "[t]he SFWMD is charged with protecting its residents' water supply, and it cannot do that without factoring climate impacts into its future calculations."[256]

In response to this apparent scientific reality, actions on consumptive use permits should, where relevant, be conditioned so as to assure significant levels of water conservation and other sustainability measures. Among these can be landscaping requirements and water use restrictions. It is easily supported by the legal authority, governing Florida water management district actions relative to Consumptive Use Permits (CUP), to require local government governing bodies (who are often also the governing body of the local water utility which serves as the applicant for a CUP) to enact meaningful native landscaping requirements and increase the planting of native shade trees as a condition of CUP issuance or renewal.[257]

---

253. For a general discussion of the environmental protection requirements of Florida's Consumptive Water Use Permit program, *see* Grosso, *supra* note 32, at 747-51; *see also* Richard Hamann, *Consumptive Use Permitting Criteria*, FLA. ENVTL. & LAND USE L. 14.2-1 (2001).

254. *See, e.g.*, FLA. ADMIN. CODE r. 40E-2.301(1) (2014). A rule of the South Florida Water Management District that requires applicants to demonstrate the proposed water use will not cause significant saline water intrusion, cause pollution, or cause adverse environmental impacts.

255. Verchick & Hall, *supra* note 14, at 2226.

256. *Id.* at 2228-29.

257. For example, local governments could require at least 75% native, drought-resistant landscaping retention or planting requirements for all new development approvals. The Department of Environmental Protection and the five water management

Next, water conservation efforts significantly greater than those in place today could also be conditions of such permits. To the extent that conservation efforts (easily, and by far, the least expensive) cannot meet a community's potable water needs, more costly engineered options to be analyzed would include desalination of water from existing saltwater-intruded wellfields, and the construction of tide gates in water supply canals to prevent upstream migration of saltwater.

G. Florida Common Law: Doctrines of Public Necessity and Public Trust

The common law doctrines of necessity and public trust are perhaps most accurately characterized as having more promise or potential than demonstrated capability to meaningfully address climate and sea level rise issues. Several authoritative commentators have explored the significant potential of these common law doctrines to be applied meaningfully to the "new" issues of climate change and sea level rise.

The state common law doctrine of public necessity can potentially be expanded to allow states like Florida more latitude in allocating water where supplies are affected by climate change. [258] The common law public trust doctrine could be expanded to require protection of public drinking water resources.[259]

H. Special Considerations: Cross-Cutting Issues

Four approaches to the use of existing legal mechanisms in particular are essential to a successful response to climate and sea level rise-related issues. Agencies administering land use and zoning, federal, state and local wetland and wildlife permitting and other laws should place an immediate emphasis on an aggressive use of (1) the prevention of cumulative impacts; (2) the preservation of natural areas and open space; (3) adaptive

---

districts could also require this for all development projects for which Environmental Resource (wetland) permits are issued, as a means of limiting the secondary water resource impacts of the permitted development.

258. Robin Kundis Craig, *Adapting Water Law to Public Necessity: Reframing Climate Change Adaptation as Emergency Response and Preparedness*, 11 VT. J. ENVTL. L. 709, 710 (2010).

259. Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 781 (2010); Verchick & Hall, *supra* note 14, at 2226.

management; and (4) the precautionary principle in the face of uncertain or disputed science.

I. Cumulative Impacts

Ecosystems that are already degraded or impaired are more vulnerable to, and less able to adapt, to climate-related impacts.[260] "Thus, by more stringently addressing these directly anthropogenic, non-climate change stressors [land use and permitting decisions] can do much to increase the resilience of ecosystems."[261] Zealous fidelity by Florida agencies to the myriad cumulative impact analysis requirements found throughout the law is critical to the effective use of existing legal authority to reduce the adverse impacts of development decisions on climate change and sea level rise resiliency. The most important cumulative impact analysis regulatory requirements are those that apply to local government coastal management plans (which must protect "human life and to control proposed development and redevelopment in order to protect the coastal environment and give consideration to cumulative impacts"),[262] state coastal construction permits,[263] wetland permits,[264] and consumptive water use permits.[265]

J. Open Space

Given that one of the most damaging existing stressors for many species is loss of habitat, one of the most effective adaptation measures humans could implement may be to preserve as much connected and varied open space as is physically and politically possible and let species and ecosystems sort themselves out in response to climate change impacts.[266]

Florida agencies should thus use their legal authority to ensure that natural areas large and healthy enough to adapt to climate changes and sea level rise. Protected areas should be able to tolerate flooding, wild fires, storm damage and other

260. Craig, *supra* note 32, at 36-37, 42, 48; INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE SYNTHESIS REPORT 65 (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf.

261. Craig, *supra* note 80, at 43–45.

262. FLA. STAT. § 163.3178(2)(j) (2014).

263. *See id.* § 161.041(1)-(2); *see also id.* § 161.053(4)(a).

264. *See id.* § 373.414(8)(a).

265. *See id.* § 373.016(2).

266. Craig, *supra* note 80, at 51–52.

impacts, and enjoy enough habitat diversity and connectivity to accommodate new species.[267]

K. Adaptive Management

"'[A]daptation' is not a one-time event. Rather, we have entered an era of long-term continual change that must be considered by decision-makers to inform ongoing adaptation strategies."[268] Adaptive management is essential to climate change adaptation.[269] Regulatory standards and individual decisions must allow for adaptive management. The Legislature, local governments, and executive agencies must be willing to avoid seeing statutes and rules as static, and instead willing to amend them when necessary to respond to new information. Individual regulatory decisions, where necessary and appropriate, should include conditions requiring removal of or changes to authorized structures, adjustments of setbacks or other aspects of the allowances, prohibitions and conditions of approval. They should avoid rigidly fixing an applicant's rights and should maintain reasonable opportunities (considering the property rights of permit-holders) to require adjustments to permitted structures and uses as needed, based on monitoring information, to respond to unforeseen or different future scenarios. Regulatory systems must respond to the reality that climate and sea level rise science and ecological responses are uncertain and evolving.[270]

A Florida example of adaptive management on a programmatic scale, relative to a major ecological restoration and public works project, is the 2000 Water Resources Development Act authorizing the Comprehensive Everglades Restoration Plan, which recognized the need for flexibility and specifically authorized adaptive management as an integral part of its implementation. [271] Authorizing a multi-component public works project expected to take over twenty years to complete, the Act calls for "future authorized changes," based on "new information resulting from changed or unforeseen circumstances, new scientific or technical information or information that is developed through the principles of adaptive management contained in the Plan" to be

---

267. *Id.* at 52.

268. NATIONAL WATER PROGRAM 2012 STRATEGY: RESPONSE TO CLIMATE CHANGE, EPA.GOV, 19 (2012), *available at* http://water.epa.gov/scitech/climatechange/upload/NWP_Draft_Strategy_03-27-2012.pdf.

269. Craig, *supra* note 80, at 65.

270. Verchick & Hall, *supra* note 14, at 2231.

271. Water Resources Development Act of 2000, Pub. L. No. 106-541, § 601(b)(2)(C)(xi), 114 Stat. 2683 (2000).

"integrated into the implementation of the Plan" in order to "ensure that the goals and objectives of the Plan are achieved."[272]

L. Scientific Uncertainty and Dispute: The Precautionary Principle

Regulatory and public policy decisions related to climate and sea level change must be made in the realm of science that is unfolding and uncertain[273] and physical and ecological impacts that are difficult to predict.[274] This can lead to political and threatened legal obstacles to the implementation of necessary measures as regulated interests contest the adoption of specific increased land use or development restrictions which they perceive as more burdensome than existing provisions.[275] While such interests might characterize changes to these standards as inappropriate, "the police power of the state is not static . . . [and] courts are in duty bound to recognize its expansion in proper cases to meet conditions which necessarily change as business progresses and civilization advances."[276]

Scientific conclusions are inherently subject to uncertainty or debate among experts, and Florida courts give significant deference to the technical and scientific expertise of agency staff so long as it has a rational basis and is not scientifically arbitrary—particularly where there is scientific uncertainty and competing scientific positions.[277] Courts recognize the precautionary principle to support regulation that resolves any scientific doubt in favor of protecting the resource.[278]

IV. CONCLUSION

With so much at stake, and with its heightened vulnerability, state, regional, and local agencies in Florida must acquire the political will to maximize the use of the police power as necessary to reduce climate change impacts and prepare for those that are inevitable. At the same time, government efforts must include early and extensive private sector and non-governmental organization involvement to maximize the robustness and

272. *Id.* § 601(h)(3)(C)(i)(I)-(II).
273. Verchick & Hall, *supra* note 14, at 2209.
274. *See* Craig, *supra* note 80, at 35–36.
275. *Id.* at 43.
276. L. Maxcy, Inc. v. Mayo, 139 So. 121, 131 (Fla. 1931).
277. *See* Grosso, *supra* note 32, at 770-72.
278. *See id.* at 772-74.

acceptance of base information and increase the chances that the political process will render the necessary policy changes.

As one of Florida's closest observers of coastal development policy has suggested:

> While many commentators have made valuable suggestions on options for managing the conflict between migrating shorelines caused by rising seas and human development, the best option from an economic and environmental perspective is to avoid the conflict by not placing human development in the way of migrating beaches. If development is placed in the way of migrating beaches, such development should have the technical, legal, and financial ability to move back from the migrating beach.[279]

Also, "even as we develop strategies to manage such conflicts, we must urgently seek to avoid incurring tremendous additional costs and losses inherent in such conflict by acting now to preserve areas where allowing shoreline migration is most reasonable."[280]

The essence of Ruppert's recommendations apply equally to all state and local government land or water decisions (as well as those of federal agencies) with any expected impact on Florida's contributions and responses to climate-related impacts.

An existing advantage enjoyed by the state is the mature body of planning and regulatory laws, and inter-governmental collaboration models, such as the Southeast Florida Regional Climate Compact in southeast Florida supported by resolutions of four counties and a number of municipalities, who "recognize that coordinated and collective action on [global climate change] … will best serve the citizens of the region, and agree to work "with", and not "at cross-purposes" [281] to each other.

Such mechanisms can, to some extent, fill the apparent void in state - level climate policies.[282] An essential part of any responsible

---

279. Thomas K. Ruppert, *Eroding Long-Term Prospects for Florida's Beaches: Florida's Coastal Construction Control Line Program*, 1 SEA GRANT L. & POL'Y J., 65, 73 (2008).

280. *Id.*

281. *See* discussion at pages associated with footnotes 20 and 21, infra. Southeast Florida Regional Climate Change Compact, at 2–3 (*available at* http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/compact.pdf (last visited Mar. 20, 2015). *Id*. at 2–3.

282. IN MAR. 2015, VARIOUS NEWS OUTLETS REPORTED THAT THE FLORIDA GOVERNOR'S OFFICE HAD BANNED STATE EMPLOYEES FROM REFERRING IN SPOKEN OR WRITTEN PRESENTATIONS THE PHRASE "CLIMATE CHANGE", ALTHOUGH THE GOVERNOR'S OFFICE DENIED

response to this enormous threat to our state will, however, require the Legislature and the Governor to support and take highly protective actions on review of local comprehensive plans; wetland, water use, and coastal construction permits, and land acquisition, to an extent and for a duration not seen before in our history. The law allows Florida's political and executive bodies to meaningfully reduce our contributions to, and prepare us for, the climate change that threatens our state. Indeed, Florida law *requires* the state to achieve physical, ecological and fiscal results that could prevent our land, water, communities and infrastructure from being overwhelmed by the environmental and physical changes otherwise sure to come.

THAT IT HAD SUCH A POLICY. *SEE* E.G. *THREATENED BY CLIMATE CHANGE, FLORIDA REPORTEDLY BANS TERM 'CLIMATE CHANGE'*, WASHINGTON POST, MAR. 9, 2015 (*AVAILABLE AT* HTTP://WWW.WASHINGTONPOST.COM/NEWS/MORNING-MIX/WP/2015/03/09/FLORIDA-STATE-MOST-AFFECTED-BY-CLIMATE-CHANGE-REPORTEDLY-BANS-TERM-CLIMATE-CHANGE/)(LAST VISITED ON MAR. 22, 2015).