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The Link Between Future Flood Risk and Comprehensive Planning

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Introduction

While discussion about sea level rise and climate change in Florida has sometimes been the center of controversy, in 2015 the Florida Legislature passed SB 1094, focusing on flood risk and flood insurance. As part of this, SB 1094 requires consideration of future flood risk from storm surge and sea level rise in certain portions of local government comprehensive plans. As comprehensive plans must be based upon professionally accepted sources of data, future flood risk from storm surge and sea level rise should very likely include the fact that the types of weather and flooding issues we have to plan for in Florida are also undergoing changing conditions.

This review includes an overview of the history of sea level rise and climate planning in Florida law as well as an update of the specifics from SB 1094 and how it is likely to be implemented. Also, we link together other Federal policy shifts in insurance, risk analysis and climate policy and what they may mean for local governments in Florida.

While there are numerous "sustainability" related initiatives associated with climate change or sea level rise, our focus in this overview is more on the linkage between climate change, flooding, storm surge, insurance, sea level rise and its evolution in Florida law. Florida has made progress in terms of recognizing the changing conditions with which we have to plan for future impacts to our communities. New data, modeling tools and information are being developed rapidly in terms of infrastructure and habitat impacts from future flood risk. With this reality comes responsibility for considering those linkages when we plan our communities.

Florida's Early Steps on Greenhouse Gas Emissions, Renewable Energy and Climate

In 2006-2007, the discussion regarding climate change in Florida began to take a more public stage. The first major steps were taken by then Governor Bush who signed into law the Renewable Energy Technologies and Energy Efficiency Act in June 2006. A major component of the Act was the creation of the new Florida Energy Commission in an advisory role related to state energy policies. The first report of the Commission was also required to include recommended steps and a schedule for the development of a state climate action plan. The report states:

> Though some uncertainty still surrounds climate change and the appropriate state policy response, Florida's 1,350 mile coastline makes its effects – a primary one being sea-level rise – a major concern. Though the scientific community continues to review the potential effects of climate change, it clearly agrees that increasing greenhouse gas

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> concentrations are causing an increase in global temperatures, and that man is primarily responsible for this increase. The FEC's Climate Change recommendations are hinged on four areas, and set targets to reduce greenhouse gases, require an inventory of such, put state government in a position to lead by example through education and unification of Florida's energy governance.

In 2007, with a transition in the Governor's office to Charlie Crist, the climate discussion continued with several executive orders and policies enacted. First and foremost, three (3) executive orders were crafted and signed focusing on reductions of greenhouse gas emissions:

- EO 07-126: *Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government*, which mandates that the state government reduce its greenhouse gas (GHG) emissions by 10% by 2012, 25% by 2017, and 40% by 2025.
- EO 07-127: *Immediate Actions to Reduce Greenhouse Gas Emissions within Florida*, focuses on a statewide reduction of utility GHG emissions to 2000 levels by 2017, 1990 levels by 2025, and 80% of 1990 levels by 2050. The Order also addresses renewable energy targets and vehicle emissions standards.
- EO 07-128: *Establishing the Florida Governor's Action Team on Energy and Climate Change* to create an Energy and Climate Change Action Plan to achieve the targets set out in EO 07-127.

In the 2008 legislative session, HB 7135 was passed to set up a framework for complying with provisions in the aforementioned Executive Orders. In summary, the bill included the "Florida Climate Protection Act" to create a greenhouse gas ("GHG") cap and trade program for utilities and development of a renewable portfolio standard ("RPS"). The bill also dealt with gasoline standards for ethanol as well as appliance energy efficiency standards. It also authorized the Executive Office of the Governor to include in the state comprehensive plan goals, objectives, and policies related to energy and global climate change amending Section 187.201, F.S. Finally, it also required state, county and municipal buildings to be built to a "green" standard. In 2008, Florida also adopted California's Motor Vehicles Emissions Standards. Interesting to note, Section 186.007(3), F.S., still includes language regarding the state comprehensive plan related climate change today, likely a remnant of this HB 7135 authorization:

> …the Executive Office of the Governor may include goals, objectives, and policies related to the following program areas: economic opportunities; agriculture; employment; public safety; education; health concerns; social welfare concerns; housing and community development; natural resources and environmental management; energy; global climate change; recreational and cultural opportunities; historic preservation; transportation; and governmental direction and support services.

In 2008, HB 697 was also passed amending Chapter 163, F.S., to include greenhouse gas reduction strategies in Comprehensive Plans. More specifically, the law required:

- Future land use elements to include energy-efficient land use patterns and GHG reduction strategies;
- Traffic-circulation elements to incorporate transportation strategies to reduce GHG emissions;
- Land use maps in the future land use element to identify and depict factors that affect energy conservation;
- Housing elements to include energy efficiency in the design and construction of new housing and use of renewable energy resources; and
- Each unit of local government within an urbanized area to amend the transportation element to incorporate transportation strategies addressing reduction in greenhouse gas emissions;

The focus to this point on climate-related issues had been largely on reductions of GHG emissions. But this began to shift in 2009 when the Florida Energy & Climate Commission began meeting. Then Governor Crist also joined numerous other governors at high profile climate and energy-related events and penned multiple support letters for Federal climate and energy initiatives. 2009 is also the year when American Recovery and Reinvestment ("ARRA") funds started being allocated at the Federal, state and local levels. The State of Florida's allocation under its State Energy Program was $126 Million and $168 Million under the Energy Efficiency Conservation Block Grant portion of ARRA. Numerous grants to institutional, private sector, home and business owners and local governments were made to promote renewable, clean and energy efficiency and rebate projects.

In the transition years of 2011-2012, energy policy in the State was shifted over to the Department of Agriculture and Consumer Services with more of a focus on policy development than managing grants from ARRA funds which were coming to an end. Several priorities were reorganized in these years in terms of the integration between growth, climate, energy and sea level rise.

A new concept appeared in Chapter 163, F.S.: "adaptation action areas" ("AAAs"). HB 7202 included the concept which was introduced into a local government's group of tools to address these issues. This is a permissive option for local governments to address sea-level rise adaption as part of the coastal management element. Potential criteria to consider when developing an "AAA" include, but are not limited to: areas for which the land elevations are below, at, or near mean higher high water, areas with a hydrologic connection to coastal waters, or areas which are designated as evacuation zones for storm surge. This addition is reinforced with a definition for "adaptation action area" or "adaptation area," which 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

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levels for the purposes of prioritizing funding for infrastructure needs and adaptation planning." Other changes in 2011 occurred, for example, the law previously required that the coastal management element limit "public expenditures that subsidize development in high-hazard coastal areas." The new law changed "high-hazard coastal areas" to "coastal high-hazard areas". Some argue that this concept was strengthened with this language change. Up until this point, "future conditions" related to flood hazard planning was not a concept contemplated in the law and the focus was on storm readiness and planning to address current flooding conditions.

In 2011, with the elimination of Rule 9J-5, F.A.C., and consolidation of some of the more detailed provisions of that rule into Chapter 163, F.S., some argue that local governments gained wider latitude in terms of what they could address in their Comprehensive Plans on these issues. Regardless of the "flexibility" some of the changes afforded, many of the GHG reduction strategies required in HB 697 from 2008 were eliminated from Chapter 163, F.S., altogether.

Addressing Sea Level Rise Head On in Comprehensive Plans

The year 2015 marked the start of considering future flood impacts in Florida Comprehensive Plans, including the impact of sea level rise on flood risk. In 2015 the Florida Legislature passed, and the Governor signed into law May 21, 2015, SB 1094 "Peril of Flood." In summary, the bill:

- Requires coastal management plans to include the reduction of flood risks and losses, creates new requirements related to flood elevation certificates, and revises requirements related to flood insurance.
- Requires local governments to now include development and redevelopment principles, strategies, and engineering solutions that reduce flood risks and losses within coastal areas in the Coastal Management Element of their Comprehensive Plan.
- Requires surveyors or mappers that complete an elevation certificate to submit a copy of the certificate to the Division of Emergency Management within 30 days of its completion.
- Allows insurers to sell "flexible" flood insurance coverage which is defined as coverage for the peril of flood that may include water intrusion coverage and differs from standard or preferred coverage within certain parameters.
- Includes numerous other provisions ranging from supplemental flood insurance policy requirements to what needs to be on the declaration page of a premium.

From a planning perspective, the most notable changes relate to Coastal or Coastal Management Elements of Comprehensive Plans. Generally speaking, local governments in coastal areas or contiguous to specific areas must include a Coastal Management Element in their comprehensive plan. This Element must set forth the principles, guidelines, standards, and strategies that shall guide the local government's decisions and program implementation and it must be based on studies, surveys, and data. The plan must contain a redevelopment component which outlines the principles which shall be used to eliminate inappropriate and unsafe development in coastal areas. SB 1094 modified the language of the original section to add significant detail as to what the mandatory redevelopment component must contain including:

1. Development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.
2. Encouraging the use of best practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.
3. Identifying site development techniques and best practices that may reduce losses due to flooding and

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claims made under flood insurance policies issued in this state.

4. Being consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R. part 60.
5. Requiring that any construction activities seaward of the coastal construction control lines established pursuant to Section 161.053, F.S. be consistent with Chapter 161, F.S.
6. Encourage local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents.

With this new law, Section 163.3178(2)(f)1., F.S., now includes "sea-level rise" as one of the impacts that must be addressed in the "redevelopment principles, strategies, and engineering solutions" to reduce flood risk. How these new requirements will be met remains to be seen. Several local governments have already begun completing vulnerability assessments related to future flood risk which could be used to meet these requirements. The bottom line is that there are new considerations in meeting these requirements as well as mutual benefits from planning for future flood risk.

Issues to Consider in Implementation of Future Flood Risk Requirements

A compliance approach for these new requirements would appear to be at the option of the local governments that are required to have Coastal Management Elements in their Comprehensive Plans with regards to when they must be addressed. Section 163.3191(1), F.S., still requires local governments to evaluate their plans at least once every 7 years to determine if amendments are necessary to reflect relevant changes in state law. That said, a local government also has the authority pursuant to Section 163.3191(2), F.S., to make a determination that amendments are necessary sooner than that 7-year requirement. With that, local governments will have discretion in how they want to comply with these new future flood risk requirements and could do so sooner than their next required evaluation and appraisal report if they chose to do so. The question is not if, it's when.

Issues to consider in meeting these new requirements related to future flood risk primarily relate to the data and timeframes that will be used to support new strategies or policies. Section 163.3177(1)(f), F.S., states that a Comprehensive Plan,

> "…shall be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment. 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."

The Section goes on to state that data must be taken from professionally accepted sources. Local governments are not required to generate new data. There are numerous resources for considering future flood risk in Comprehensive Plans and the beauty will be in the eye of the beholder. But local governments should consider the source of data to meet these requirements and whether or not it is appropriate under the circumstances.

Additionally, Section 163.3177(5)(a), F.S., states that each local government comprehensive plan must include at least two planning periods, one covering at least the first 5-year period occurring after the plan's adoption and one covering at least a 10-year period. Considering data and timeframe requirements together raises issues that warrant further consideration in the planning process such as:

- What type of data will be used for developing principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise? What data is available? If a local government wants to consider generating it, how and what tools are available? Should the data only encompass the minimum 5-10 year time periods or much longer time periods? What about developing best practices among local governments that are already looking out 40, 50, and more years when considering sea-level rise?
- What type of data is needed to support development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency? The array of strategies could be varied from "retreat" or limitations on growth in certain areas to requiring freeboard ordinances to build at higher elevations above base floor.
- What type of information is needed to identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state? This could most certainly include freeboard ordinances or further modifications to floodplain regulations.
- What is needed to "encourage" local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents?

What is clear is that these new requirements focusing on mitigating future flood risk would benefit from the best datasets possible and timeframes that are far enough out that they can actually help project when the damage will occur and where. For instance, a 5- or 10-year planning timeframe may not be far enough out to see any appreciable increase in future flood risk from a modeling perspective. But a 15- or 20-year timeframe might be far enough out to make decisions related to future flood risk and 50-year or longer timeframes, allow for consideration of future flood risk in longer-term infrastructure projects.

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The challenge will be to link major planning decisions such as where areas can develop, where infrastructure should be placed or retrofitted and what habitat to consider acquiring or managing. The harmonizing will occur by tying the "useful life" of infrastructure or investment decisions with where the future flood impacts will occur and when. Where the rubber will meet the road will be the goals, objectives and policies that are required to meet these new requirements.

National Flood Insurance Program Overhaul and Sea Level Rise

The National Flood Insurance Program ("NFIP") administered by the Federal Emergency Management Agency ("FEMA") provides federally backed flood insurance within communities that enact and enforce floodplain regulations. As of October 2013, there were 5.5 million residential and commercial policies in force, with over $1.28 trillion in written coverage with annual premiums of about $3.8 billion. From 1978 through October 2013, over 2 million losses were paid, totaling over $50 billion. Over 2 million NFIP policies are written on Florida properties, with approximately 268,500 policies receiving subsidized rates. This accounts for approximately 37% of the total policies written by the NFIP.

Flood insurance through the NFIP is only available in communities that adopt and enforce federal floodplain management criteria (over 21,600 communities in 56 states and territories participate in the NFIP). The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in Special Flood Hazard Areas. Special Flood Hazard Areas are defined by FEMA as high-risk areas with a 1% chance of flooding each year, also known as the 100-year or base flood. A home in a Special Flood Hazard Area has a better than a 1 in 4 chance of flooding during a 30-year mortgage. While the NFIP has been effective in making new buildings safe from damage from the 1% chance flood, damage still results from floods that exceed the base flood, from flooding in unmapped areas, and from flooding that affects buildings constructed before the community joined the NFIP.

In 2012, the Biggert-Waters Flood Insurance Reform Act ("Biggert-Waters Act") reauthorized the NFIP for 5 years. Key provisions of the legislation required the NFIP to raise rates to reflect true flood risk, make the program more financially stable, and change how flood insurance rate maps ("FIRM") updates impact policyholders. These changes would have eventually resulted in premium rate increases for approximately 20% of NFIP policyholders nationwide. The Act increased flood insurance premiums for second homes, business properties, severe repetitive loss properties, and substantially-improved and substantially-damaged properties that were receiving subsidies. Policyholders whose communities adopt a new, updated FIRM that results in higher rates would have experienced a 5-year phase in of rate increases to achieve rates that incorporate the full actuarial cost of coverage. The passage of the Biggert-Waters Act was obviously not without controversy.

The Consolidated Appropriations Act of 2014 and the Homeowner Flood Insurance Affordability Act of 2014 rolled back and modified some provisions of the Biggert-Waters Act. In summary the new provisions:

- Reduced the mandatory rate increases for subsidized properties from 25% annually to no less than 5%, generally not to increase more than 18 percent annually.
- Properties that remain subject to the 25% annual increase include older business properties, older non-primary residences, severe repetitive loss properties, and pre-FIRM properties.
- The 20% annual phase in of premium increases after adoption of a new or updated FIRM was reduced to a maximum of no more than an 18% annual premium increase. Policyholder refunds were provided to those whose rate increases were revised by the 2014 changes.
- Additional revisions included increasing the maximum flood insurance deductibles, directing FEMA to consider property specific flood mitigation in determining a full-risk rate, and creating the position of a Flood Insurance Advocate.

FEMA develops maps for coastal flood hazards based on *existing* shoreline characteristics, wave and storm climatology at the time of the flood study (which is the underlying basis for FIRMs). In accordance with the current Code of Federal Regulations, FEMA does not map flood hazards based on anticipated future sea levels or flood risk. FEMA's basis for this is that over the lifespan of a flood study for establishing FIRMs, changes in flood hazards from sea level rise and climate change are typically not large enough to affect the validity of the study results. Therefore, FIRMs will not be very helpful in evaluating scenarios for future flood risk without further analysis to meet the new Chapter 163, F.S. future flood risk requirements.

This current versus future flood risk analysis is about to change. In accordance with Biggert-Waters, FEMA is to establish a Technical Mapping Advisory Council that will provide recommendations on flood hazard mapping guidelines—including recommendations for future mapping conditions such as the impacts of sea level rise and future development. FEMA will be required to incorporate future risk assessment in accordance with the recommendations of the Council.

Under the Community Rating System ("CRS"), communities can be rewarded for doing more than simply regulating construction of new buildings to the minimum national standards. With NFIP and mapping reforms already being implemented, communities are looking for ways to offset or mitigate the impacts of rate adjustments and CRS has become a more important solution.

FEMA's Community Rating System Program

"Encouraging" local governments to participate in CRS to achieve flood insurance premium discounts for their residents is a new SB 1094 requirement. The CRS recognizes community efforts beyond the minimum standards by reducing flood insurance premiums for the community's property owners. Under the CRS, the flood insurance premiums of a community's residents and businesses are discounted to reflect that community's work to:

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- Reduce flood damage to existing buildings,
- Manage development in areas not mapped by the NFIP,
- Protect new buildings beyond the minimum NFIP protection level,
- Preserve and/or restore natural functions of floodplains,
- Help insurance agents obtain flood data, and
- Help people obtain more cost effective flood insurance.

CRS discounts on flood insurance premiums range from 5% up to 45%. Those discounts provide an incentive for new flood protection activities that can be undertaken to mitigate impacts in the event of a flood. To participate in the CRS, a community can choose to undertake some or all of the 19 public information and floodplain management activities described in the CRS Coordinator's Manual. Based on the points the community earns, they are assigned a class rating of 1 to 10.

Communities can get extra points by undertaking various activities. FEMA will also review activities not listed in the Coordinator's Manual for credit based upon how well those activities increase public safety, reduce property damage, avoid economic disruption and loss, and protect the environment. A community can work with FEMA upfront on any of these additional activities to assure they will translate into scored points and result in actual improvement in the rating process.

One area of overlap related to sea level rise is that the 2013 Coordinator's Manual included new provisions related to credit for climate change and sea level rise planning. This recognizes that the future of how floodplains will look and be managed is an important consideration in planning. Factor's listed affecting future flood risk are included in the Manual such as: increased impervious surfaces in developing watersheds, beach nourishment projects, new fill in floodways, rising sea levels and changes in natural functions of floodplains. While FIRM maps do not consider these future impacts on the regulatory side, CRS incentivizes their consideration for credits in the following ways:

- Credit is provided under Section 322.c for communities that provide information about areas (not mapped on the FIRM) that are predicted to be susceptible to flooding in the future *because of climate change or sea level rise*.
- To become a Class 4 or better community, a community must (among other criteria) demonstrate that it has programs that minimize increases in *future flooding*.
- To achieve CRS Class 1, a community must receive credit for using regulatory flood elevations in the V and coastal A Zones that reflect future conditions, *including sea level rise*.
- Credit is provided under Section 342.d when prospective buyers of a property are advised of the potential for flooding *due to climate changes and/or sea level rise*.
- Credit is provided under Section 412.d when the community's regulatory map is based on future-conditions hydrology, *including sea level rise*.
- Credit is provided under Section 452.a if a community's stormwater program regulates runoff from *future development*.
- Credit is provided under Section 452.b for a community whose watershed master plan manages *future peak flows* so that they do not exceed present values.
- Credit is provided under Section 512.a, Steps 4 and 5, for flood hazard assessment and problem analysis that address areas likely to flood and flood problems that are likely to get worse in the future, including (1) changes in floodplain development and demographics, (2) development in the watershed, and (3) *climate change or sea level rise*.

As of May 2014, over 235 counties and municipalities in Florida were already in the CRS program. So for communities to meet the new SB 1094 of "encouraging" participation in CRS, a community could 1) enter into the program for the first time, 2) potentially strive to improve the rating, and/or 3) define policies to maintain or enhance its rating. One way to enhance a rating would be to apply for the above listed credits related to future flood risk analysis. Further analysis shows that upwards of 518 points could be available through addressing sea level rise in the CRS process. Given that the national average Class in CRS is an "8" (1,000-1,499 points and resulting in a 10% reduction in premiums in a Special Flood Hazard Area), 518 "extra" points could become important to achieve a 7, 6, or better Class rating (1,500-1,999/2,000-2,499 resulting in a 15-20% reduction in premiums in a Special Flood Hazard Area).

The savings can be demonstrable. As of January, 2014, there were 1,903,435 policies in effect in Florida with $923,900,922 in premium costs and $176,797,176 in CRS savings (19.14% saved). Miami-Dade County had the highest number of policies by far at 186,610 with $68,493,847 in total premium costs saving $19,454,923 (28.4% saved). Non-CRS communities spent had total premium costs of $94 million and received no discount.

Only 18 out of 235 communities in Florida had achieved a Class Rating of 5 and no communities in Florida as of May 2014 had achieved a Class Rating of 4. Given that these future flood risk criteria are relatively new in the CRS evaluation process, FEMA should be consulted to determine examples of where these points have been awarded and what data was used to achieve them.

Other Federal Policy Initiatives to Consider

While Florida law now requires consideration of future flood risk due to sea level rise, Flood Insurance Rate Maps of the NFIP are heading in that direction, and the CRS incentivizes consideration of sea level rise, still other federal actions and changes also promote or assist communities in incorporating sea level rise into their thinking and activities. Examples in this area include:

U.S. Army Corps of Engineers ("Corps"):

The Corps has considered sea-level change in its planning activities since 1986. This is separate from the regulatory aspects of its mission, but

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in 2000, sea-level change considerations were included within its Planning Guidance Notebook. In 2009 the Corps released its first "Engineer Circular ("EC")" 1165-2-211, "Incorporating Sea-Level Change Considerations in Civil Works Programs," and EC 1165-2-212 "Sea-Level Change Considerations for Civil Works Programs". Most recently in December 2013, EC 1100-2-8162 extended this guidance. In July 2014 the Corps created guidance (Engineer Technical Letter 1100-2-1) covering "Procedures to Evaluate Sea Level Change: Impacts, Responses and Adaptation". The Corps also has available a tool to create vulnerability assessments of non-developed natural coastlines or beach protection projects which was updated for use with the new sea-level guidance.

Considered "regulations", these policies establish a framework for incorporating the direct and indirect physical effects of projected future sea level change across a project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining Corps projects and systems of projects." Again, this does not apply to the Corps' regulatory review duties of permits; rather, the need to take account of changing sea levels only currently applies to projects the Corps is bound to undertake under Congressional funding and direction.

National Environmental Policy Act ("NEPA"):

On December 24, 2014, the Council on Environmental Quality ("CEQ") released *Revised* Draft Guidance on how federal agencies should evaluate GHG emissions and the impacts of climate change when conducting reviews pursuant to NEPA evaluation. This guidance updates and expands previous guidance from 2010 and applies to all proposed Federal actions, including land and resource management activities.

Focusing on the climate change and sea level aspects, the new guidance directs agencies to consider the implications of climate change impacts on the proposed action, including potential adverse environmental effects that could result from drought or sea level rise. While agencies have wide discretion in how to consider climate change and sea levels, two key considerations are: 1) reliance on agency experience and expertise to determine whether an analysis of GHG emissions and climate change impacts would be useful and 2) application of the "rule of reason" to ensure that the type and level of analysis is appropriate for the anticipated environmental effects of the project. The focus is on the long term viability of the project tying design alternatives to climate change effects on a proposed Federal action of the useful life of that project. This is especially the case if it will be located in a vulnerable area or impact vulnerable populations or resources. With the NEPA guidance, the take home message is that while the level of analysis is somewhat flexible, addressing the issue is not.

Federal Flood Risk Management Standards ("FFRMS")

On January 30, 2015, the President signed Executive Order ("EO") 13690, "Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input", which amended E.O. 11988, Floodplain Management, issued in 1977. The standard targets federal investments that are implemented through Hazard Mitigation Assistance Grants, the Public Assistance Program, and any other FEMA grants when they fund construction activities in or affecting a floodplain. These actions include: (1) acquiring, managing, and disposing of Federal lands, and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. This applies to all new construction and substantially improved structures (e.g., reconstruction, rehabilitation, addition, and any other improvement) the cost of which equals or exceeds 50% of the value of the structure. The FFRMS builds upon this EO and is to be incorporated into existing Federal department and agency processes used to implement it.

The FFRMS does not impact minimum floodplain management criteria in 44 CFR Part 60 for participation in the NFIP, FIRMs or the rating/claims process under the NFIP. What it does do is require all Federal investments in and affecting floodplains to meet higher flood risk standards such as federally funded buildings, roads and other infrastructure. Individual federal agencies will undertake separate rulemaking to implement the EO. The standard outlines 3 approaches for resiliency:

- Utilizing best-available, actionable data and methods that integrate current and future changes in flooding based on science,
- Two or three feet of elevation, depending on the criticality of the building, above the 100-year, or 1%-annual-chance, flood elevation, or
- 500-year, or 0.2%-annual-chance, flood elevation.

It's important to note that sea level rise considerations are also part of this analysis including 1) use of the U.S. Department of Commerce's - National Oceanic and Atmospheric Administration's ("NOAA's") or similar global mean sea-level-rise ("GMSLR") scenarios, adjusted to local relative sea-level ("LRSL") conditions and 2) a combination of the LRSL conditions with surge, tide, and wave data using state-of-the-art science in a manner appropriate to policies, practices, criticality, and consequences (risk).

Comments on the *Draft Guidelines for Implementing Executive Order, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* were taken earlier this year with a May deadline.

Among the many questions that the new FFRMS has raised, its potential impact on the National Flood Insurance Program and Housing and Urban Development funding and grants have been critical. In response, both FEMA (http://www.fema.gov/media-library-data/1433261696599-041232427db8c587d74fd1b5ac-65c7fe/FFRMS_FEMA_Public_6-2-2015.pdf) and HUD(http://portal.hud.gov/hudportal/HUD?src=/press/speeches_remarks_statements/2015/Statement_071715)

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have released information on how the FFRMS implementation guidelines would - and *would not*—impact these programs. FEMA states that the FFRMS will not directly impact flood insurance rate maps, policy premiums, or require properties outside of current Special Flood Hazard Areas to have flood insurance.

As for HUD funding, HUD states:

> The proposed rule would not apply to single-family home mortgages for acquisition or refinancing of existing homes under the Federal Housing Administration or any other program. The FFRMS would have no effect on the vast majority of privately owned homes and businesses. The new standard would be incorporated into the existing review process for mortgage insurance, so the elevation or floodproofing component would not apply unless new construction or substantial improvement to an existing structure in a floodplain is proposed with Federal funds. The FFRMS elevation or floodproofing component would only apply when Federal program funds are used to build, or significantly retrofit or repair, structures in and around floodplains, to ensure that those structures are resilient, safer, and long-lasting.

The Confluence of Data, Insurance and Planning Related to Sea Level Rise

The many federal and state programs now incorporating climate change and sea level rise create real synergy supporting local governments integrating appropriate policies to address these challenges in their comprehensive plans. The data needed to support such policies and new risk mapping is some of the same information that likely will also be needed to serve as a foundation for meeting the new requirements in Chapter 163, F.S., discussed earlier, that requires coastal management elements to consider future flood risk as exacerbated by sea level rise. Some brief examples can illustrate how federal and state programs and requirements are intertwined and are mutually beneficial:

- Most certainly actual participation or improving Class ratings in CRS far exceeds the new requirements to "encourage" participation in CRS and linking that with future sea level rise hazard data can be a means to improve that Class rating. Whenever a local government actually does analyses of sea-level rise and future scenarios to improve their CRS class rating, such work should be reflected in the Comprehensive Plan's coastal management element as that would help fulfill the new requirement to consider sea level rise and future flooding impacts.
- Local governments will have to determine what is relevant and appropriate to look at as well as the planning periods that should be used in meeting the new statutory requirements to consider sea level rise as part of the flood perils in coastal areas. Of course, there can be linkages and mutual benefits in collecting and managing good data in this process. An example is that of a local government working to get into the CRS program, or improve its Class rating. A key aspect of that FEMA process is typically developing good elevation and mapping information for future flood risk. This type of data is also the foundation for a vulnerability analysis that identifies future impacts from sea level rise. Principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which result from high-tide events, storm surge, flash floods, stormwater runoff, *and the related impacts of sea-level rise* should be based on where the community is vulnerable to these factors. Therefore, collecting good elevation data can provide credits in the CRS program and also be a building block for good mapping and as well as the basis of a future flood vulnerability analysis to develop strategies for reducing that risk.
- Another example would include methods to create strategies to remove coastal real property from FEMA flood zone designations or reduce losses due to flooding and claims made under flood insurance policies. In certain areas these strategies may include floodproofing or elevating properties, voluntary relocation programs or structural solutions. Without having accurate information about what areas will be subject to future flooding and when, the location of where these strategies would be effective is unknown or the extent to which they are needed is also unknown. While mapping flood zones or using FIRMs is quite common to identify risk or repetitive loss, enhancing these data sets with better elevation information and integrating future scenarios would be beneficial in determining the return on investment for actual strategies that reduce loss and future risk consistent with new statutory requirements.

Conclusions

There are numerous examples of local governments that are developing vulnerability analyses, new Comprehensive Plan Elements, ordinances, etc. There are numerous local governments involved in CRS (235 out of over 400 communities in the NFIP in Florida). Finally, there is Federal guidance on regulatory and investment decisions that can serve as an example of how more resilient standards can impact agency decision-making. What lacks in many instances is a holistic approach where all of these numerous policies and initiatives come together at the local level. The extent to which SB 1094 will drive that coordination is unknown at this point, but what is clear, is that these new Chapter 163, F.S. requirements reflect a "sea change" in the way we consider the future of flood risk in our communities.