

Senate Commerce Committee on Extreme Weather and Coastal Flooding
Field Hearing - April 10, 2017

Testimony Submitted By:
Dr. Jennifer L. Jurado, Chief Resilience Officer and Director
Environmental Planning and Community Resilience Division
Broward County, FL

Good morning, Senators, Representatives, and distinguished guests.

I am Dr. Jennifer Jurado, Chief Resilience Officer and Director of the Environmental Planning and Community Resilience Division for Broward County. Thank you for convening this hearing here in Southeast Florida and for bringing attention to the vitally important issues of climate science, coastal risk, and the urgency of action. It is a great honor to speak with you regarding the very real challenges facing Broward County and southeast Florida as a whole. Our region is working aggressively to address the increasingly unavoidable realities of climate change, and the impacts of sea level rise in particular on coastal counties.

Not only is the global science clear, but regional data and local impacts align unambiguously with the predictions.

We know that the sea level has risen and continues to rise at an ever accelerating rate. Like many regions across the United States, we are already grappling with impacts. However, the south Florida circumstance is unique given the expansive impacts of sea level rise on our region's drainage, flood control, and water supplies.

These are not examples of future risk and exposure, but rather the reality we experience in our communities from sea level rise today. Tidal flooding is no longer a mere nuisance, but an agonizing recurrence for many south Florida communities, with water levels that increasingly exceed predictions and place people, businesses, and infrastructure at increased risk.

Seasonal tidal flooding isolates neighborhoods, restricts commerce, and disrupts essential services. Stormwater systems and streets fill with water as seawalls are overtopped. Coastal waters backflow through storm drain pipes, causing water to rush out of storm drains. Marina boat ramps turn into funnels, pouring the ocean onto nearby streets and inundating neighborhoods. Businesses must seal their front doors with caulk to keep the water at bay. Employees and customers use alley entries, donning galoshes or rolling up their pant legs. Many have become practiced at making a mad dash for their vehicles before the parking lot and adjacent roadways become inundated with saltwater for 2-3 hour periods. This condition repeats 12 hours later, and daily over the next week, and again the following month, and so on.

These are the visible effects, but the region's vulnerabilities to the impacts of sea level rise extend well beyond our coastal corridors. Our regional flood management system, the Central & South Florida Flood Control Project (CSF Project for short), is losing capacity as rising seas restrict discharges at tidal structures, compromising flood protection for inland communities miles away from the coast. The South Florida Water Management District has estimated that 18 of these structures are already within six inches of their design capacity. At the same time, due to our porous geology, groundwater elevations

are rising in direct response to the rising sea, reducing the ability of the soil to store water and thereby exacerbating flooding.

The situation is immensely challenging, but it has also marshalled leadership from across our region, in an organized effort focused on both climate mitigation and adaptation strategies. In 2010, this regional collaboration was formalized as the Southeast Florida Regional Climate Change Compact, organized by Broward, Palm Beach, Miami-Dade and Monroe Counties, and inclusive of 108 municipalities. The efforts of the Compact have accelerated climate resiliency policy, planning, and projects throughout the region in an unprecedented fashion that has become a model for regions across the globe. There is an urgency in our efforts, and a growing realization across all sectors that the time for preemptive action has already passed and that immediate action is required. We understand the science. We have developed the tools. It's time to invest in infrastructure and updated design standards that will reduce risk, improve our communities, and stimulate our economies.

Our communities are taking action and ownership. Across the region we have formally adopted a unified sea level rise projection as the basis for adaptation planning and integrated that projection into capital, land use, water supply, transportation, emergency management, and capital investment plans. We have pursued strong partnerships with our federal agencies, relationships that continue to expand in their scope, depth, and power to inform.

This has included:

- A decade-long collaboration with the United States Geological Service in the development of advanced hydrologic models to help assess the impacts of sea level rise on water supplies and flood elevations.
- A resiliency study under the Planning Assistance for States Programs with the United States Army Corps of Engineers to evaluate the future flood conditions, risk reduction measures, and resiliency standards for sea walls.
- A study that will build upon modeling tools developed by FEMA. A collaborative resiliency study with the EPA focused on a coastal municipality.
- A partnership with Deltares, a Dutch water institute, in a NOAA-funded project focused on future flood risk, sectoral interactions, and decision-support for resiliency planning.

The technical investments and projects are now being translated to practical applications as we prepare to update our regulations to address future flood conditions, including revised design standards for drainage systems, higher finished floor elevations, and consistent standards for interconnected and interdependent systems. These investments will help reduce flood risk, including future FEMA losses, and will create a foundation for a more resilient community and economy.

We recognize our local communities must shoulder certain responsibilities to protect our residents, businesses, infrastructure, properties, and environmental resources, and we are aligned regionally in this determination. However, the effectiveness of our regional planning, of all of our investments, is dependent on strong federal and state partnerships and joint action. Given our location between two vitally important national priorities, the Everglades and the Atlantic coast, our flood protection relies upon federally-supported upgrades to the Central & South Florida Flood Control Project and the Intracoastal Waterway.

So, as we continue to make significant advancements regionally and locally, we urge our federal leadership to prioritize the building of resilient communities and infrastructure and specifically request

that our federal and state partners undertake a detailed evaluation of the CSF Project and Intracoastal Waterway for flood protection service levels under evolving climate conditions, especially sea level rise, and to develop a comprehensive infrastructure and funding plan to execute the necessary improvements for our region's flood protection.

I mentioned the partnership agreement with the Army Corps to develop recommendations for resilient sea walls. With more than nearly 400 miles of armored and armored shoreline, preliminary estimates suggest a cost between \$1 billion and \$4 billion. Needless to say, this level of investment is beyond the means of Broward County government alone to finance. But this investment and many others will need to be undertaken, because the no-action alternative will be far more costly.

Of course, seawalls are only part of the solution. Coastal flood control structures—part of the CSF Project—will need to be converted from gravity-based to pump-operated systems. Improvement of each structure is likely to cost around \$50 million. Stormwater systems will need to be upgraded. Miami-Beach has advanced a \$400 million stormwater improvement plan, just to address sea level rise. Roads will need to be raised and drainage systems will need to be reengineered.

Coastal communities account for nearly 50 percent of our national GDP. Southeast Florida accounts for one-third of our state GDP. Investment in the resilience of these communities is essential to preserving not only local economies, but our national economy. Investments in resilience will provide shared benefits. Deferral is an option we cannot afford.

I would also like to take a moment to acknowledge that we also have an obligation locally, as a state, and as a nation, to reduce greenhouse gas emissions—and this need is just as urgent. Many climate impacts will be unavoidable, given our emissions to date. But our choices today and in the next few decades about energy, transportation, land use, food, and environmental protection will determine if future generations face manageable climate impacts or severely compromised conditions.

In Southeast Florida, we are well aware of our contributions to the problem of climate change. We have some programs in place to reduce our energy and fuel use, but our efforts are admittedly too modest. We face significant challenges—often beyond our direct control—in deploying solar energy, reducing building energy use, and transitioning to a transportation system with more choices and fewer emissions. Fortunately, the federal government has been a leader and partner over the last decade, helping local governments and regions to begin to overcome these barriers by offering significant technical assistance, backed by national-level policy decisions which provide great benefit to our vulnerable region. We hope that our federal leadership continues to provide resources to federal agencies for climate science, clean energy and transportation programs, and local assistance. We want to do our share of the national and international work to cut emissions, and we will, but we continue to need the federal government's help.

Thank you again for this opportunity and for your efforts to bring policy and resources to bear in addressing the risk and impacts of climate change on our communities and nation.