

EXAMINING SHORELINE AND RIVERBANK RESTORATION IN THE FACE OF CLIMATE CHANGE

FIELD HEARING

BEFORE THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

FEBRUARY 23, 2022

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ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

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EXAMINING SHORELINE AND RIVERBANK RESTORATION IN THE FACE OF CLIMATE CHANGE

WEDNESDAY, FEBRUARY 23, 2022

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee, met, pursuant to notice, at 10:00 a.m. at Bethany Beach Town Hall, Hon. Thomas R. Carper (chairman of the committee) presiding.

Present: Senator Carper, Congresswoman Lisa Blunt Rochester.

OPENING STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR FROM THE STATE OF DELAWARE

Senator CARPER. All rise.

I was just kidding. Congresswoman, this is an audience with a sense of humor. Our son Ben when he was in the third grade, gave advice to his fellow third graders at Brandywood Elementary School, home of the Bumble Bees just up north in New Castle County. And his advice to them was humor is everything. People say where did he get that. I'm not sure, but you can never have too much of it. Even in the midst of all the challenges we face here at home and around the world, there's a reason to be optimistic.

I'd like to quote Albert Einstein, who used to say in adversity lies opportunity, in adversity lies opportunity.

Albert Einstein was a professor at Princeton, about halfway between here and New York City. And he used to take the train a lot out of Princeton.

And one day he got on the train and he was looking for his ticket. And he looked in his coat, he looked in his pants, he looked in his shirt, he looked in his briefcase. He couldn't find his ticket.

And the conductor comes along. And Albert Einstein is pretty anxious. And the conductor said Dr. Einstein, we know you, we know who you are, we know you ride the train a lot, so don't worry about it, you're OK.

And then he walks away, the conductor walks away and starts to go into the next car. And just before he goes into the next car, he looks back into the car and he sees Dr. Einstein down on his hands and knees looking for his train ticket. And the conductor rushes back there. He says Dr. Einstein, Dr. Einstein, don't do this, you ride the train all the time, we know who you are, we know who you are. And Dr. Einstein looked up from his hands and knees and

he says young man, I know who I am, too. I just don't know where I'm supposed to go.

We're going to talk a little bit today about where we need to go, where we need to go. I'm delighted to be joined here by Lisa Blunt Rochester, who serves our State in so many different capacities. And we're delighted to be joined here by our leaders, leadership from the Army Corps of Engineers. I'm a retired Navy captain. I always say when I'm around people in the Army, different uniforms but the same team.

And here in this—I'll just get this off my chest. We love the Army Corps of Engineers. And you and the folks that you lead have helped out State in so many ways, continue to help our State in so many ways from the Maryland line all the way up to Pennsylvania. And we probably don't say thank you enough. We try to, but thank you for all that and your folks do for us, do with us, and thank you for joining us here today.

I have about a 2-hour statement that I will open with. Then we'll have lunch. It won't seem like 2 hours, but it's a lot shorter. I can assure you. But we brought this gavel in. And if I don't use it, my staff will kill me. There you go. And if people nod off, I'm going to use it again. I see here in the audience we're joined by my former colleague, Mary Landrieu. Mary, stand up.

Let's give Mary a nice round of applause. Her husband, Ernest Frank. Mary, like me, is a former State treasurer and she and I served together. Pretty good partners for any number of years in the Senate. And delighted to see both of you here today. The letter C figures prominently in the history of our State. The letter C figures prominently in the history of our State. Many, many years ago, colonists came from all over the world, from the Netherlands, the Dutch, we had Swedes, the Finns. Just people came from all over the world to settle Delaware and settle this country. But the letter C, colonists. A lot of them raised corn. And as time would go by, a lot of them would raise chickens, which would eat the corn.

Over 100 years ago, we changed our Constitution in order to make Delaware an attractive place for companies to incorporate. And today I think there are more Fortune 500 companies incorporated in the State of Delaware than in any State in the country. So corporations is a big deal. Constitution. We were the first State to ratify the constitution. About 70, 80 miles up the road in Dover, 25 white guys gathered at the Golden Fleece Tavern for two or 3 days, drank a lot of milk, reviewed the document that had been sent down from Philadelphia. And after 3 days of debate, ratified it unanimously. So we became the First State.

Cars. There was a time not that long ago where we built more cars. We had a huge plant, as Lisa remembers, as our lieutenant Governor remembers. Huge plant, a Chrysler plant in Newark and a huge GM plant near New Port, Delaware.

And so we are also famous for our credit cards. Raise your hand if you have a credit card on your body or your purse. If you have a credit card, there's about a 60 percent chance that it was issued from a bank in Delaware. For those of you who don't always promptly pay your fees, thank you. You are forgiven and encouraged.

A lot of companies here, a lot of companies here over the years. A lot of them are mom and pops, but some of them are pretty big. The DuPont Company is just one of those that are really big. We have some of the biggest banks, corporations really around the world. And big companies like AstraZeneca call Delaware their American home headquarters. We have also leaders like Carney, John Carney, our Governor. Like Castle, who was our Governor and our Congressman. Like Carper. And then we have LBR, Lisa Blunt Rochester.

Congresswoman ROCHESTER. Forget Coons.

Senator CARPER. Oh, Coons, our Senator.

And we have LBR. No C there. So somebody said one time maybe no C, but a really cool Congresswoman. There you go. Can I get an amen? Can I get an amen? Amen. And we have coasts. We have a big coast here for a little State. And we have a lot of five-star beaches. The last time I checked, we had more five-star beaches than any State in America, something we're really proud of. And one of them is named after our Lieutenant Governor Bethany Hall, Bethany. Nice round of applause.

Thank you.

Senator CARPER. And we have a couple of other Cs that are more troublesome. And one of those is climate change. It's not something I thought a whole lot about when I used to come here as a guy in graduate school right out of the Navy. Didn't think a lot about climate change at that time. Just thought about having a good time, and we certainly did. I made my decision to run for State treasurer at the age of 29 just a few miles up the road from here on a beach, a Delaware beach just up the road. My wife and I for many years would come to Bethany Beach with our sons when they were younger, just little guys. And we actually made the decision, a family decision for me to run for Governor right here in Bethany Beach out of Bethany West where we had rented a house. So this place has a special meaning for me and for our family.

And the other C I want to mention is the Corps, the Army Corps of Engineers. I'm privileged to serve as chairman of a committee called Environment and Public Works. We have jurisdiction over roads, highways, bridges, climate change, clean air, clean water, drinking water, wastewater, sanitation, flooding. And the Army Corps of Engineers is really part of our entities that we oversee. And it's really a source of joy, just a source of joy.

That was an ad lib. That was a riff. And now I have to get even more serious and because the business before us is serious.

And we are here today to discuss two immensely important and related topics, climate change and coastal restoration. Having this discussion in the communities that directly feel the impacts of climate change bring new perspectives and a greater sense of urgency to our work.

So everyone who has traveled to Bethany

Beach, whether you live around here or you've come from another State or upstate, we're happy that you have and we want to welcome you warmly.

I'll thrilled that Lisa is here, our Congresswoman. And we've partnered on so many things in the past. I'm happy and delighted to be partnering with you today.

The U.S. Army Corps of Engineers is a principal steward of our Nation's water and infrastructure. The Corps plays a critical role in the construction and maintenance of much of the infrastructure we see around us in Delaware, such as our Port of Wilmington, our wetlands, our marsh, and our beaches.

The Port of Wilmington is being expanded to the north. Basically doubled in size, doubled in employment. We expect another couple thousand people to be working there in a few years. And none of that would happen without the help of the Army Corps of Engineers. So we're grateful for that.

If you had a banana with your breakfast today and you bought it on the east coast, that banana came through the Port of Wilmington. We are the top banana port on the east coast.

The Corps is also responsible for operating America's water highway, 12,000-mile long system of inland waterways that are vital, vital to domestic and international commerce. Each year this expansive system moves more than 500 million tons of commodities, 500 million tons of commodities. The includes 6 percent of our Nation's agricultural exports.

The Corps' action to operate and maintain the system results in economic benefit of nearly \$14 billion each year, \$14 billion each year in economic benefits, tens of thousands, hundreds of thousands of jobs actually. As Joe Biden would say actually good paying, good union jobs. Want to work that in.

The Corps is also tasked with protecting our communities and our infrastructure from floods and from coastal storms. In 2020 alone, these efforts amounted to more than \$250 billion in damage prevention, in damage reduction. And that's not all.

As we see in Delaware and across our nation when these ecosystems are protected by the

Corps, communities are protected and important wildlife habitat is conserved.

These restoration activities also drive tourism and ecotourism economies. For example, people travel from all over to enjoy our beaches and observe our beloved horseshoe crabs and our migratory birds.

In the United States, more than 128 million people, this is a great stat, in the United States there are more than 128 million people who live in coastal counties. That represents more than 40 percent of our Nation's population.

Get this. If America's coastal counties were their own nation, just imagine all the counties on the coast were their own nation, their gross domestic product would rank third in the world, exceeded only by China and by the U.S. as a whole.

Unfortunately, today these population centers, these engines of our economy face a growing unrelenting threat from climate change and many times do not compete well for Federal assistance due to antiquated budgeting procedures.

Since 1901, global sea levels have risen by nearly ten inches. Well, that may not sound like much, but it is. And the story gets worse, because in the days to come, the years to come, we're going to witness not just ten inches of sea level rise, but a whole lot more.

A recent report released actually earlier this month by NOAA, not Noah the flood, the ark, but

NOAA, National Oceanic and Atmospheric Administration, they released a report that got a lot of attention. It's going to continue to get a lot of attention.

They project with respect to sea level rise that it's going to accelerate in the next 30 years unless we intervene. The report explains that the United States will experience a profound increase in the frequency of coastal flooding, even in the absence of storms or heavy rainfall.

The signs are clear. We must make our infrastructure both more resilient and more nature-based to withstand our changing climate.

And while we simultaneously address the root cause of climate change, too much carbon dioxide in our atmosphere, trapping emissions from all sort of places, our cars, our trucks, our vans, our power plants, our manufacturing facilities.

In Delaware, we've demonstrated that we can protect communities and the environment while also growing our economy. It's not a choice. We can do both and we need to do both.

But the continued threats from climate change are threatening this balancing act. The same can be said for Louisiana. On any given day, Louisiana loses, get this, a football field size piece of wetlands to the sea every 100 minutes.

Think about that. Think about a football field every 100 minutes. That piece of land is gone to the sea.

That, if you add that up since 1930, it's an area the size of Delaware. So it's huge, huge. And it's going larger and more quickly. Think about it.

These losses will only speed up if we fail to respond and take the action that's called for. The science is clear. The science is clear.

One of my favorite songs by Thomas Dolby, a one hit wonder, was *She Blinded Me with Science*. And we don't want to be blinded with science. We want to be guided by science, guided by science.

And the science is clear. We must attack this crisis on all fronts, addressing both the root causes of climate change while also repairing the damage that we've already experienced. The latter is where the Army Corps of

Engineers plays a vital role. Despite the Corps' historical effectiveness of managing flood and coastal storm damages, the growing threat of climate change demands that this agency adapt to better protect our coast. And to help the agency to do so, Congress needs to give the Corps a proper budget and necessary authorities.

Last year, in fact, last fall, not that many months ago, President Biden signed the Infrastructure Investment and Jobs Act into law, which I had the privilege to help write and to manage on the floor. A large part of it came out of my committee that I'm privileged to chair.

This law, combined with the expected annual appropriations and supplemental spending, are expected to provide the Army Corps of Engineers with an additional \$100 billion to spend over the next five years.

I'll be honest with you. That's a lot of money. It's probably not enough money to meet all the requirements and all the challenges

that are facing them. But it's a huge amount of money compared to what we've provided them in the past.

This historic investment will allow the Corps to begin to clear its deck of backlogged projects across our country and free up additional funds that must be used to address key initiatives in our battle against climate change.

To incentivize, rather to increase the focus of the Army Corps' mission around climate change, Congresswoman Blunt Rochester, Louisiana Senator Bill Cassidy, and Congressman Graves from Louisiana. What's his first name; do you know?

Congresswoman ROCHESTER. Garret.

Senator CARPER. Garret. Thank you. And I have introduced legislation known as the Shoreline Health Oversight Restoration Resilience and Enhancement Act. Try to put that on a bumper sticker. But fortunately, there's an acronym, as there is in most cases. And this one is the word SHORRE, the word SHORRE with two Rs, two Rs. I didn't do that well in spelling.

If enacted, the SHORRE Act will empower the Corps to protect our Nation's coast from the effect of climate change. And our bill does this by elevating coastal restoration to a primary mission of the agency and promoting the development of sustainable nature-based resilience projects. Our legislation also facilitates the Corps' work with

State and local partners and climate mitigation and ecosystem restoration projects. We look forward to discussing the SHORRE Act with our colleagues in Congress and working to include it as part of our biannual water infrastructure legislation that the Congress will take up this year.

We take up Water Resources Development Act every 2 years. And we passed it with huge bipartisan margins. We are hopefully taking that up on the floor later this year and hope we get the same strong response and support. And part of that we hope will be the SHORRE legislation that I just talked about.

And that leads us to today's hearing. We'll soon hear from a diverse panel of witnesses, wonderful witnesses, including two highly regarded coastal Governors, our own Governor and the Governor of Louisiana, senior Army Corps officials and stakeholders who are deeply invested in the health and resiliency of our Nation's coasts.

And we were grateful to each of you for your presence and really for your leadership and eager to hear from this panel and others that will follow us as we discuss the critical intersection of climate change with our coasts and the US Army Corps of Engineers.

Now a few introductions. First, Major General William, Butch, Graham, proud Panther. Graduate of the University of Pittsburgh. He was Army ROTC there. I was Navy ROTC there. Not there, but not far away in Ohio State. But where he's the current deputy commanding general for civil and emergency operation at headquarters U.S. Army Corps of Engineers. If that sounds like a big job and a big deal, it is. He has a huge, huge job and challenge.

There he oversees all the Corps' civil works activities along with a \$7 billion annual program and responses to storms and other natural disasters.

His previous Corps assignments included commander of the Corps' North Atlantic Division in Pittsburgh district. He's literally

served our nation all over the world. And we're grateful for that and honored by his presence today.

General Graham is no stranger to Delaware. He's many times received parking tickets here in Bethany Beach. Never been towed, never been. No, he's not received any parking tickets until today.

And I'm sure we can get it written off if you do. The nice thing about this time of the year is there's no parking meters. This is just great.

I love it, love doing it at the beach in the winter.

But anyway, we're grateful for his support and assistance and that of the men and women that he leads.

General Graham, you're now recognized to make your statement. Welcome and thank you.

STATEMENT OF MAJOR GENERAL WILLIAM GRAHAM

Major General GRAHAM. Chairman Carper, Representative Blunt Rochester, I'm surely honored to testify before you today and thank you for this opportunity to discuss the important topics of shoreline and riverbank restoration and resiliency.

The Corps, as you said, sir, has a primary responsibility for the planning and construction of flood and coastal storm risk management systems along our Nation's shorelines and rivers. The coastal storm risk management project that includes

Bethany Beach and South Bethany provides critical protection from severe Atlantic storms and rising sea levels all along the Delaware coast.

Incorporating natural and nature-based features, such as sand-filled beaches and dunes, and certainly appreciate the photographs that the team has assembled in front of us, this project provided vital protection during Hurricane Sandy in October of 2012, as well as during several nor'easters experienced in recent years.

Project features incurred damages due to those significant coastal storms. Public and private property located landward, where we are, of the project received relatively little damage.

The Corps and its partners have been able to reconstruct these project features after these events, demonstrating an ability to prepare, absorb, recover, and adapt to the continuing threat of coastal storms, and Senator, I would say climate change as well. This is the very definition of resiliency, Delaware resiliency.

Looking regionally, examples broadly such as this clearly demonstrate the need for a more coordinated and resilient systems-based approach to flood and coastal storm risk management.

Also in the wake of Hurricane Sandy, Congress provided significant authorities and appropriations to conduct a comprehensive study along the north Atlantic coastline. This effort, called the North Atlantic Coast Comprehensive Study, highlighted the long-term challenges from coastal storms facing this part of the Nation. It underscored the need to support resilient communities. And Senator, as you mentioned, the ecosystems there as well.

While still promoting equity and encouraging economic growth, the North Atlantic Coast Comprehensive Study emphasized a need to transition, where possible, from traditional structural measures, gray infrastructure, to non-structural, natural, and nature-based systems, green infrastructure.

Further, given projected sea level and climate change trends that I mentioned earlier, the report concluded that further investments and development in science and engineering, to include research and development, is critical to ensure that the Corps continue to provide sound storm risk reduction solutions.

This broad regional study identified nine high risk focus areas for more in-depth investigation. The city of Norfolk's Coastal Storm Risk Management Study was one of those focus areas. The Norfolk study was undertaken to evaluate risk management solutions for a major city that is predicted to be heavily influenced by rising sea levels.

Approved in the Water Resources Development Act of 2020 and initially funded for construction through the Infrastructure Investment and Jobs Act, this recommended project includes four storm surge barriers as well as numerous non-structural features, such as flood proofing and building elevations.

Additionally, the plan includes construction of oyster reefs and living shorelines to increase resiliency via the incorporation of natural and nature-based features.

And Senator, when I leave this hearing today, I'll travel down to Norfolk to link up with Mr. Conner, our assistant secretary for the Army for civil works, to tour this very project.

Senator CARPER. Give him my best. Thank you.

Major GRAHAM. Will do, Senator.

Across the country—

Senator CARPER. Norfolk is where the USS Delaware was built, most modern fast attack nuclear submarine in the world, which comes to Delaware Port of Wilmington on May—March 30th, March 31st. Be there.

Sorry. That was a commercial.

Major General GRAHAM. That's a hard act to follow.

Senator CARPER. Where were we?

Major GRAHAM. Senator, across the country, new and ongoing Corps planning efforts continue to build upon the lessons learned in the aftermath of Hurricane Sandy.

The recently completed Coastal Texas Protection and Restoration Study, another one of these large regional studies, has employed a similarly comprehensive regional approach. The recommended plan includes a combination of aquatic ecosystem restoration and coastal storm risk management features that function as a system to reduce the risk of coastal storm damage to natural areas and man-made infrastructure.

Looking nationally, the Corps continues to look ahead at the changing landscape of risk reduction and anticipates delivering a large nationwide study known as the National Shoreline Management Study by the end of this year.

The National Shoreline Management Study, which is near and dear to I'm sure a lot of people in this room here today, builds on a series of eight regional assessments that explore shoreline erosion and accretion characteristics, certainly a subject that's near and dear to the State of Delaware.

These assessments included extensive stakeholder and tribal engagements to make sure that our recommendations are in line with the changing climate.

So moving forward, as outlined in our Climate Action Plan, the Corps is committed to evolving our procedures, our planning efforts, and project operations to bolster adaptation and increase resilience to the impacts of climate change. In doing so, the Corps seeks to develop opportunities to enhance the effectiveness of our civil works project and reduce risks to vulnerable communities.

Chairman, thank you and thank you, Representative Blunt Rochester, for providing us the opportunity to testify here today. And I look forward to answering any of your questions.

[The prepared statement of Major General Graham follows:]

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS

COMPLETE STATEMENT OF

MAJOR GENERAL WILLIAM H. GRAHAM
DEPUTY COMMANDING GENERAL FOR
CIVIL AND EMERGENCY OPERATIONS

BEFORE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ON

SHORELINE AND RIVERBANK
RESTORATION AND IMPROVEMENTS

23 FEBRUARY 2022

Chairman Carper, Ranking Member Capito, and distinguished members of the committee. I am honored to testify before you today, and I thank you for the opportunity to discuss the Army Civil Works program and, specifically, the U.S Army Corps of Engineers' (Corps) flood risk management program. Through this program, the Corps helps communities to reduce their flood risks from inland and coastal storms. The Corps approach to flood risk management incorporates natural and nature-based features, and involves sharing responsibility with local cities and communities through partnerships. I will also discuss our progress in combating climate change through research and development, and addressing environmental justice concerns. Most importantly, I look forward to continuing to work with this committee, the Congress, and the Administration to help address the Nation's water resources challenges.

As you are aware, the Corps is involved, where authorized by law, in the planning and constructing of flood risk management projects along our Nation's shorelines, bays, rivers, and tributaries. The existing Corps project at Cape Henlopen to Fenwick Island: Bethany Beach/South Bethany, Delaware, is a good example. This project provides risk management for approximately three miles of shoreline within the project area with sand fill beaches and dunes. The project incorporates natural and nature-based features and was in place during Hurricane Sandy in October 2012, and during the October 2015 and January 2016 Nor'easters. Although damage occurred to the actual project features because of those significant coastal storms, the public and private property located landward of the project received relatively little damage. The Corps and its partners have been able to reconstruct these project features after these events, demonstrating the ability to prepare, absorb, recover, and adapt to the continued threat of coastal storms.

The size and magnitude of Hurricane Sandy devastated major areas of the northeast coast, in part due to a lack of a coordinated systems approach to coastal storm risk management. On October 27-28, 2012, Hurricane Sandy moved alongshore on the southeast U.S. coast, and reached a secondary wind-speed peak of 90 mph with a diameter of over 1,000 nautical miles. Hurricane Sandy turned to the north-northwest and made landfall on the evening of October 29, 2012, as a "post-tropical cyclone" near Atlantic City, New Jersey, causing extensive flooding, beach erosion, and coastal damage along much of the Delaware, New Jersey, and New York coasts.

The North Atlantic Coast Comprehensive Study (North Atlantic Study), which the Corps prepared following Hurricane Sandy, highlighted the long-term challenges from coastal storms in this part of the Nation, within a framework that aims to promote sustainable communities, sustainable ecosystems, and equity. The North Atlantic Study emphasized a need to transition, where possible, from traditional coastal storm risk reduction measures to nonstructural, natural, and nature-based systems. Additionally, given the broad number of objectives of different stakeholders, the report recommended a systems approach that would lead to more comprehensive plans that exhibited a

shared responsibility for risk management. Lastly, with new and increasing problems due to projected sea level and climate change trends, the report concluded that further investment and development in science and engineering is critical to support sound coastal storm risk management (CSRM) solutions.

Following Hurricane Sandy, the Congress enacted the Disaster Relief Appropriations Act of 2013 (Public Law 113-2). The work that the Corps has completed and continues to study and construct using the appropriations provided under this law has contributed to improved coastal storm risk management in the areas of the northeast region of the United States affected by Hurricane Sandy. Currently, the Philadelphia District of the Corps is involved in CSRM projects along more than 100 miles of oceanfront and bay coastline in Delaware and New Jersey. Many of those projects, in combination with other projects in the New York District, combine to produce a 88-mile system that reduces the risk of storm damage for developed oceanfront in New Jersey. This risk management system significantly lowers the risk of property damage, the risk of erosion of wildlife habitat, and the potential loss of life. Only one authorized project, Hereford Inlet to Cape May Inlet (Wildwoods), remains to be constructed to complete this system.

The North Atlantic Study also recommended that the Corps study nine high-risk focus areas within the northeast region. For example, in one of these nine focus areas, the Corps evaluated risk management solutions for the City of Norfolk, which is predicted to be heavily influenced by rising sea levels, making significant damages more likely when combined with storm surge resulting from potential hurricanes or coastal storms. The recommended plan for the Norfolk Coastal Storm Risk Management (Norfolk Coastal) study, which the Water Resources Development Act of 2020 authorized, has now been partially funded for construction through the Infrastructure Investment and Jobs Act, and includes four storm surge barriers, as well as nonstructural features such as flood proofing, building elevations, and buyouts. Additionally, the plan includes construction of oyster reefs and an area of living shoreline, which is intended to reduce future operation and maintenance costs by incorporating these natural and nature-based features.

The Norfolk Coastal Study also included substantial local, state, and federal coordination to ensure that flood risk management was included for the minority community in the Chesterfield Heights area of Norfolk. The City of Norfolk conducted over 40 meetings with the local community, public schools, Norfolk State University, and numerous other stakeholders. The result of this effort was the city's Ohio Creek Project, which will provide risk management for the Chesterfield Heights area. This project includes a berm, flood wall, and oyster reef and living shoreline as well as upgrades to the local stormwater management system along with road raisings and pump station construction. The Ohio Creek Project will be implemented by the City of Norfolk using funding received from a National Disaster Resilience Competition grant provided through the U.S. Department of Housing and Urban Development.

The recently completed Coastal Texas Protection and Restoration Study (Coastal Texas) also utilized a comprehensive approach that builds upon the recommendations of the North Atlantic Study. The proposed \$29 billion Coastal Texas plan includes the "Ike Dike", along with a combination of aquatic ecosystem restoration and other CSRM features that function as a system to reduce the risk of coastal storm damages to natural areas and man-made infrastructure. This plan also includes the capability of adapting as urban growth continues and climate change increases (particularly sea level rise).

The Coastal Texas plan will provide risk management for a growing population of approximately 6 million people. The plan includes built-in redundancies and robust lines of both gulf and bay defenses to lower the risk of impacts from a storm surge, and the effects of tides and wave action, in a coastal storm. In addition, the plan is anticipated to improve approximately 6,610 acres of coastal habitat, including significant resources that provide unique services, functions, and values. These ecosystem restoration measures will enhance the resiliency to climate change of the natural and man-made systems and increase the effectiveness of coastal storm risk management features system-wide.

The Corps also is on target to complete the National Shoreline Management Study (National Study) by September 2022. The National Study builds on a series of eight Regional Assessments that explore regional shoreline erosion and accretion characteristics, economic and environmental effects of shoreline change, and shoreline management approaches. The development of the Regional Assessments included extensive public engagement, and through consultation with Tribal Nations, to develop regional recommendations for action to address shoreline erosion, accretion, and their consequences. The National Study report will also provide an overview of the Nation's shorelines, highlights of the Regional Assessments, and recommendations to further national shoreline management approaches to increase coastal resilience to climate change.

Critical to informing a comprehensive, shared-responsibility approach to risk management across the Nation, the report will provide a description of resources committed by Federal, state, and local governments in CSRM. The National Study will also include a description of the extent of, and economic and environmental effects caused by, erosion and accretion along the shores of the U.S., and the causes of such erosion and accretion. Lastly, the report will detail a description of the systematic movement of sand and sediments along the shores of the U.S. with information on the use of a systems approach to sand and sediment management, which could help to provide more efficient approaches.

Under leadership of the current Administration, and in alignment with the authorities provided by this committee, the Corps is moving forward with other Federal agencies to help address the vast water resource challenges posed by global climate change, including water scarcity, sea level rise, and observed increases in severe weather events. The Corps continues to ensure that the latest actionable information and science and engineering principles are incorporated into its new and updated technical guidance. In October 2021, the Corps released its Climate Action Plan, which focuses on the continued modernization of Corps programs and policies that support climate-resilient investments as well as planning for climate change-related risks to missions and operations. The Corps is a co-author of an upcoming interagency report on sea level scenarios. It is being developed to coincide with the fifth National Climate Assessment and will include an update to current sea level change guidance.

To support these efforts, we will also continue to invest in our Research and Development (R&D) program. We are working to further inform our R&D initiatives and strengthen our partnerships with academic institutions to benefit from the enormous capacity of our Nation's scientists. Our investments in R&D have helped us to find solutions for present and future water resources challenges. We also look to R&D solutions to further inform the development of our sustainability strategies including Engineering with Nature (EWN). The Corps' EWN initiative supports sustainable infrastructure systems and embraces the intentional and substantial use of natural systems in providing water resources solutions. The Corps will continue to work to develop actionable research and design parameters on natural and nature-based features to ensure consistent application in future projects.

Under leadership from the Administration, the Corps is working both internally and with other agencies to develop, evaluate, and implement changes to programs and projects to incorporate and enhance resilience to climate change and particularly to help disadvantaged communities reduce their risks, and to adapt, to a changing climate. These efforts are occurring at both a programmatic level and on a project-by-project basis. The Corps will continue to provide meaningful communication and engagement opportunities for these disadvantaged communities, including those located in rural areas, and through consultation with Tribes, to encourage and enable them to participate in relevant studies and to also examine ways to mitigate the impact of climate change in their communities.

We are committed to ensuring that the Corps continues to identify the best ways to manage flood and coastal storm risk, restore aquatic ecosystems, and ensure equity on water resources issues in collaboration with our sponsors and partners. Our goal is to achieve a high economic, environmental, and public safety return for the Nation, which will benefit all Americans.

Mr. Chairman, this concludes my statement. I appreciate the opportunity to testify today and look forward to answering any questions you may have. Thank you.

Senator CARPER. Thank you very much, General.

The second witness is Brigadier General Jason E. What does the E. stand for?

Brigadier General KELLY. Eric, sir.

Senator CARPER. General Kelly, commanding general for the South Atlantic Division of the Army Corps of Engineers. General Kelly did not go to the Naval Academy. Where did you go to school? Was it west? By a point?

Brigadier General KELLY. Chairman, I'm a proud graduate of the United States Military Academy at West Point.

Senator CARPER. Navy salutes you.

General Kelly is responsible for 25,000 square mile area, which includes all or part of the eight southern states, including Puerto Rico and the U.S. Virgin Islands. General Kelly comes to us with a different perspective that given the destructive hurricanes that settled over Puerto Rico and Virgin Islands and wrecked such havoc will be critical as we work on these policies. General Kelly, we're delighted that you're here. Thanks for bringing the General with you. And you're recognized to give us your statement.

Thank you.

STATEMENT OF BRIGADIER GENERAL JASON E. KELLY

Brigadier General KELLY. Chairman Carper, Representative Blunt Rochester, I'm honored to testify before you today and greatly appreciate the time you've allocated for me to present features of the United States Army Corps of Engineers South Atlantic Division Civil Works Program.

I welcome the opportunity to share ongoing shoreline and riverbank restoration improvement efforts. Our productive and positive use of dredge material, the many ways that we're using innovation and efficiencies to address comprehensive benefits, identify and assist economically distressed and historically underserved communities, and enhance resiliency to accommodate sea level rise and other impacts from global climate change.

Most importantly, I look forward to working with this committee, the Congress, and the administration to help address the Nation's water resources challenges. The South Atlantic Division has a diverse Civil Works Program that includes projects in commercial navigation, flood and storm damage risk reduction, and ecosystem restoration.

Our region includes the navigation channels, ports, and waterways in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida, Puerto Rico, and the U.S. Virgin Islands. We're responsible for the Enterprise Deep Draft Navigation Center of Expertise and the Everglades restoration effort, the largest ecosystem restoration program in the world.

I'm especially excited to highlight the South Atlantic Coastal Study, commonly referred to as SACS, the largest coastal risk assessment ever conducted by the Corps of Engineers, covering more than 60,000 miles, six states, and two territories.

This is a mammoth undertaking, a great example of our goal to maximize the use of research and development, while promoting community resilience through partnering.

It best illustrates our effort to overcome institutional barriers and adapt to climate change to include sea level rise.

America's water resources, rivers, wetlands, inland and coastal waterways, and more, support billions of dollars in recreation and commerce, affect public safety, restore much-needed habitat for fish and wildlife, and provide water supply benefits.

Army Corps of Engineers' decisionmakers must ascertain the Federal interest for competing alternatives and recommend plans worthy of Federal investment.

In addition to the national economic benefits account, innovative methods of determination are being implemented now to fully capture maximum benefits that may be affected by other accounts, to include regional economic development, environmental quality, and other social effects.

Examples in my region of responsibility include the South Atlantic Coastal Study, Selma, the Charleston Peninsula, and the San Juan metro flood risk management projects. The aforementioned projects are but a sampling, intended to highlight how the South Atlantic Division is addressing comprehensive benefits, identifying and assisting economically disadvantaged and distressed communities to include rural and tribal communities, and enhancing the resiliency of our shorelines and riverbanks to accommodate sea level rise and other global climate change impacts.

As emphasized in Lieutenant General Spellman's testimony to this committee last month, the Corps continues to seek opportunities to identify and document the full spectrum of economic, environmental, and other benefits to the Nation.

The projects that I've mentioned are all recent examples of this commitment in action. We're committed to ensuring that the South Atlantic Division will continue to seek innovative ways to identify the most equitable and efficient solutions to our Nation's water resources, issues in a manner that is of high engineering and economic and environmental quality.

Mr. Chairman, this concludes my statement.

I appreciate the opportunity to testify today. I look forward to answering any questions you may have. Thank you.

[The prepared statement of Brigadier General Kelly follows:]

**DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS**

COMPLETE STATEMENT OF

**BRIGADIER GENERAL JASON KELLY
COMMANDING GENERAL, SOUTH ATLANTIC DIVISION**

**BEFORE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS**

ON

**SHORELINE AND RIVERBANK
RESTORATION AND IMPROVEMENTS**

FEBRUARY 2022

Chairman Carper, Ranking Member Capito, and distinguished members of the committee. I am honored to testify before you today and I thank you for the opportunity to discuss the Army Civil Works program within the South Atlantic Division (SAD). I look forward to discussing the ways in which we are working to use innovation and efficiencies to identify and assist economically disadvantaged communities, and to enhance the resilience of our coastal communities to climate change, as well as any questions the committee may have. Most importantly, I look forward to continuing to work with this committee, Congress, and the Administration to help address the Nation's water resources challenges.

The South Atlantic Division has a diverse Civil Works Program that includes projects within all three Army Civil Works main missions, which are: commercial navigation, flood and storm damage reduction, and aquatic ecosystem restoration. Our region includes coastal ports and their navigation channels, and inland waterways; the Enterprise Deep Draft Navigation Planning Center of Expertise; the South Florida Ecosystem Restoration effort, which includes the Everglades and is the largest ecosystem restoration program in the world, and numerous projects to reduce flood risk to our coastal communities.

I would like to focus today on the South Atlantic Coastal Study (SACS), which is the largest coastal risk assessment ever conducted by the U.S. Army Corps of Engineers (Corps). The SACS is a great example of our goals to use Research and Development (R&D) to help communities reduce their flood risks. In addition to discussing the SACS, I will also share with you three examples within our region of how we are working with disadvantaged communities to help reduce their flood risks.

The SACS is a mammoth undertaking, covering more than 60,000 miles of shoreline, including six states and two territories (Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, U.S. Virgin Islands, and Puerto Rico). The risk assessments conducted by the SACS can help to identify and inform potential opportunities to improve the management of flood risks from coastal storms across the region.

Partnering has been a primary goal on this study, and there have been extensive outreach efforts engaging with over 1,300 stakeholders who are involved and have the capability to lead an effort to implement change in their coastal communities. We are communicating collaboratively with other Federal resource agencies as well, to identify and discuss ways we can all work together to overcome institutional barriers and adapt to climate change, including sea level rise. Through the SACS, the Corps has developed the Coastal Hazard System (CHS), a national coastal storm hazard data

resource that stores modeling results including storm surge, astronomical tide, waves, currents, and wind. The CHS will aid in the identification of solutions for today's and tomorrow's challenges like those posed by extreme rainfall events and the impacts resultant of severe floods and coastal storms.

The Corps recognizes the value in Engineering with Nature and the SACS illustrates how Regional Sediment Management (RSM) can involve nature-based solutions. With the RSM Regional Center of Expertise in SAD and through RSM advancements in the SACS, the Corps is working to identify sustainable ways to provide water resources solutions.

As highlighted by the SACS, the Corps continues to focus on areas at high risk from climate change and its impacts to our citizens. The Corps, along with other Federal and state agencies and local governments, is working to address water resource challenges posed by climate change, including water scarcity, sea level rise, and observed increases in severe weather events, and their effects on communities and aquatic ecosystems.

I would like next to discuss two other studies where SAD has been developing, and evaluating, options to help disadvantaged communities reduce their flood risks and adapt.

The Charleston Peninsula Coastal Storm Risk Management Study is investigating coastal storm impacts on the Charleston Peninsula and, in partnership with the city of Charleston and its stakeholders, is exploring effective, economically viable and environmentally sound solutions to mitigate coastal storm risks. The combined features of the proposed plan now under consideration include a storm surge wall, nonstructural measures, and living shorelines that would reduce coastal storm risks in this peninsula, where there is a cross-section of different socio-economic communities, including disadvantaged communities. In association with the storm surge wall, natural and nature-based features consisting of oyster reef-based living shoreline sills could possibly reduce coastal storm impacts to natural shorelines and nearshore benthic resources seaward of the wall. The living shoreline sills would be intended to reduce erosion of existing wetland marsh, while reducing scour at the proposed storm surge wall, and provide other environmental benefits. As part of the study, the Corps has identified minority communities vulnerable to flood damages. The study evaluated risk reduction measures including structural, non-structural and natural features to address conditions associated with sea level rise and climate change.

After several hurricanes and the devastation of Hurricane Maria in Puerto Rico, the Corps has been undertaking several coastal storm risk management studies in Puerto Rico to help reduce the risk of damage from coastal flooding and enhance resilience to climate change, particularly to help disadvantaged communities reduce their risks and adapt to a changing climate. The San Juan Metro Area Coastal Storm Risk Management feasibility study assesses coastal flood risk from extreme high-water events that result from storm surge, waves, tides and combinations of these forces, as well as the effects of sea level change, which is expected to exacerbate coastal flooding. The recommended plan consists of a system of structural and natural and nature-based features in strategic locations, which would work together to reduce the risk of damages from coastal flooding and extreme high-water events. Specifically, the plan includes levees, breakwaters, seawalls/floodwalls, and natural and nature-based features including an elevated living shoreline and breakwater that would help to reduce the flood risk along the shoreline as well as create habitat. The proposed project is expected to benefit a disadvantaged community with a minority population of approximately 99% of the total population and where approximately 71% of the residents in the project area are considered below the poverty level.

Finally, the Princeville, North Carolina, Flood Risk Management Project is located on the Tar River in Edgecombe County, North Carolina. The town is the first municipality in the United States incorporated by former slaves and is subject to severe flooding from the adjacent Tar River during storm events. The planned project is based on a comprehensive assessment that balances flood risk management, life safety, cost effectiveness, and preservation of the cultural environment while fully responding to Executive Order 13146, titled the "President's Council on the Future of Princeville, North Carolina." The project was fully funded for construction using funds provided under the Additional Supplemental Appropriations for Disaster Relief Act of 2019, and we are evaluating the design features on a path to construction.

I am committed to ensuring that the South Atlantic Division will continue to seek innovative ways to identify the most equitable and efficient solutions to our Nation's water resource issues, in a manner that is of high engineering, economic and environmental quality.

Mr. Chairman, this concludes my statement. I appreciate the opportunity to testify today and look forward to answering any questions you may have. Thank you.

Senator CARPER. Thank you very much.

Thank you both for your testimonies.

My recollection is that you both have children. Is that right?

General Graham, what do you have? Boy, girls, a couple of boys? What do you have?

Major General GRAHAM. Senator, I've got two older girls and a younger boy.

Senator CARPER. OK. General Kelly?

Brigadier General KELLY. Sir, I have two boys.

Senator CARPER. Congresswoman Blunt Rochester, our lieutenant Governor, Bethany Long Hall, and others here, other elected, being joined by our Governor and the Governor of Louisiana, we go to schools a lot. We get invited to all kinds of schools, from kindergarten up through graduate schools and colleges.

And I love going to grade schools and we'll do assemblies.

And I'll always remember going to this one grade school down here in Sussex County. And I was introduced to speak. In the auditorium was the kindergarten all the way back to I think the fifth grade. And a little girl in the third grade stood up, and she said, after I made my remarks, and she said what do you do, anyway. And I said well, I'm a United States Senator. And she said well, what do you do. And I said well, I help make the rules for our country.

I asked if they had rules for her school. She said yes. I said do you have rules on your bus. And she said yes. I said you have rules at home. She said yes. I said we have rules for our country.

And along with 99 other senators, 435 U.S. Representatives, and the president, we help make the rules for our country.

The little boy sitting next to her said what else do you do. And I responded we help people. We help people in all different kinds of ways.

And as parents yourselves, if you're in a school in Delaware or some other place, and a third and fourth grader stood up and said what do you do at the Army Corps of Engineers, General Graham, how would you explain it so that child might be able to understand the importance of what you do?

Major General GRAHAM. Senator, we help people, too. We help communities like we're standing in here today. And that's why the 34,000 men and women who make up the Army Corps of Engineers have joined us, because they value this work. They love delivering for the State of Delaware. Certainly the Philadelphia district that supports the State is absolutely committed to that.

So Senator, I think the way I would answer that is similar fashion, we help people.

Senator CARPER. Good.

I can barely see General Kelly's lips move when you gave that answer. So I think you two are in harmony. OK. All right.

General Graham, you have previously testified that the Corps accounts for climate change when it formulates a project, and that's true.

But it's clear that the Corps only formulates projects to address coastal and river storm surge and not the other impacts of climate change, such as extreme rainfall and sea level rise.

In places like Delaware and Louisiana, the Corps' failure to account for a full range of climate impacts excludes a good number of projects from consideration and severely disadvantages these states.

Here is my question. How can the provisions of this legislation I described earlier, the SHORRE Act, how can the provisions of that legislation help the Army Corps of Engineers better address the impacts of climate change as you design projects to work on? Go ahead, please.

Major General GRAHAM. Chairman Carper, thank you very much for that question.

At the request of your team, we are currently working to answer that very question and preparing effect statements on the provisions of the SHORRE Act. And those will be available shortly.

After the hearing, I'll certainly get on the phone and make sure that we'll check on the progress to make sure that those effect statements are on track.

Chairman, regarding how we currently consider climate change, our authorities are based on the analysis of specific storm events. And to that end, we analyze all aspects of the flooding problem, including contributions from rainfall, high rivers, and sea level rise, which is known as combination flooding.

And certainly to the testimony that you're going to receive after us, the folks coming up from Louisiana, combination flooding with the Mississippi River, the Gulf, and hurricanes rolling in off the Gulf, they are at ground zero for that combination flooding.

We are, the Corps of Engineers, consistently updating, innovating, and improving our engineering processes, our key modeling, and the research and development that underpins all of that engineering.

Senator CARPER. Thank you. Thanks very much.

Maybe a follow-up, quick follow-up. How should the Army Corps and the Office of Management and Budget alter their budgeting process so that the Corps can better plan for and execute projects designed to address a broader range of climate change impacts?

Major General GRAHAM. Chairman, thank you for that question.

General Kelly touched on this earlier. And we've been working together for many, many years. But the Corps strives always to maximize the benefits to help people.

Our job is to provide Mr. Conner, the assistant secretary of the Army for civil works, with our best technical recommendation.

Mr. R.D. James, who was the previous assistant secretary of the Army for civil works, he provided about 2 years ago the Corps guidance to use all four of the PR—principles, requirements, and guidelines benefit categories that General Kelly spoke to earlier, the national economic development benefits, the regional economic development benefits, the environmental benefits, and the other societal benefits.

We hadn't been allowed to use those all in the past. Mr. James allowed us to use those. And Mr. Conner has told us that he supports that decision and he's going to provide us refined guidance in the future.

So that's what our teams are currently working on to be able to provide all those benefits.

Senator CARPER. Thank you. Another question for General Graham relating to climate change in project formulation. As you know, the new NOAA, National Oceanic and Atmospheric Administration, sea level rise report just came out on February 15th, not even two weeks ago. This report paints a very sobering, very sobering picture for our country, really for the world, but for our country at large about the needs to address climate change. But it also has real implication for coastal communities, like this community right now.

As our Congresswoman, as our lieutenant Governor, and as our Governor knows, Delaware is the lowest lying State in the country. Our State is sinking. And the seas around us are rising. If that doesn't get our attention, something is wrong.

But here is my question. The report of NOAA on sea level rise really underlines the need to address climate change. But it also has real implications for coastal communities, like right now.

Technical assistance provided to my staff during the drafting of both this SHORRE legislation I keep talking about and the coming Water Resources Development Act, which we hope to fold the SHORRE Act into, the larger piece of legislation, later this spring. We were told that when the report is final, the Corps will, and this is a quote, consider and update the technical guidance and if appropriate, update those documents.

Given the Corps was the coauthor of the report, what are the next steps for the agency in the process of incorporating the findings and updated sea level projections into project design and implementation?

I'll just say, our witnesses know this, if you go back 30, 40, 50, maybe 60, 70 years look at sea level rise, it's maybe eight, nine, ten inches over close to a century. That's going to continue.

That's the bad news.

The really bad news is it's going to continue a lot faster.

And the question is are we fast enough on our feet to get ready for it and turn it around before it's too late?

General Graham, go ahead.

Major General GRAHAM. Chairman Carper, that is—the question is not if the sea level behind us is going to rise, it's when.

And we've been incorporating for decades various sea level rise scenarios that address that very question. Not if, but when.

And we will take a look at the specific geographical area and we'll look at three scenarios; a high, medium, and low.

And it's not, again, Chairman, when the sea level is going to rise—sorry. It's not if the sea level is going to rise, it's when.

In General Kelly's area, we're expecting one to two feet. In the Gulf region, certainly two feet. In this region, about a foot to 18 inches is what we're expecting, as the NOAA report said, over the next 50 to 60 years. And Chairman, as you said, that's accelerating.

So sir, you have our absolute commitment that we are going to ensure that our guiding engineering doctrine incorporates that in real time.

Senator CARPER. All right. I'm going to turn now, General Kelly, to a question or two for you if I could.

On the scope of feasibility studies, as a leader of the South Atlantic Division, you currently oversee a number of studies and

projects for communities in the southeast, I think in Puerto Rico also, that are at risk from climate change.

In the course of study of the Charleston Peninsula in southern Carolina, in South Carolina, the initial project recommendations by the Corps raised significant public concerns, as you know.

The public felt that there were several shortcomings in the Corps' decisionmaking, including an over reliance on constructed project elements. Also, the exclusion of economically disadvantaged communities from the project benefit area and a failure to identify holistic solutions that would address flood risk other than storm surge.

Here is my question. What are the key lessons you learned from the Charleston Peninsula study process? And are there provisions in the SHORRE Act, this legislation I keep talking about, that will help future studies avoid the problems that you've encountered?

Brigadier General KELLY. Chairman Carper, for me, the first lesson and one that continues to provide benefits for my command, good partnership, the value of good partnership, persistent engagement, and transparency cannot be overstated.

The Charleston Peninsula has a high level and risk vulnerability to coastal storms. And this is exacerbated by the combination that General Graham mentioned of sea level rise and climate change. And that was true over the period of analysis.

The study investigated storm surge, but we also recognize that this area is prone to flooding, specifically sunny day tides. And that was not investigated in the study.

The recommended plan has a robust benefit to cost ratio of 11 to one. And it will reduce risk posed by coastal storm surge and also enhance the city of Charleston's ability to quickly recover from storm surge disruptions.

As you mentioned, the prominent feature of the plan is a storm surge wall, but it also includes three areas of non-structural measures where a storm surge wall was not optimal based on topography and location of the storm surge sources.

Two particular areas that I call out is the Rose Mont and Bridge Water Village, both economically disadvantaged communities within the study area. The non-structural measures recommended in these communities include flood proofing and structural elevation raises.

When I think about the lesson learned and the persistent engagement, the study team engaged with residents and business owners during the planning process through a series of outreach meetings. And based on this feedback, we recognize the need to migrate from an environmental assessment to an environmental impact statement to make sure that we disclose the potentially damaging environmental, cultural, and visual impacts of the project.

This EIS is underway. And it will include a more detailed mitigation plan and a more robust environmental justice analysis.

The Corps is currently preparing the effect statements, as General Graham mentioned, for the specific SHORRE Act, but I support a holistic process for flood risk management and full consideration of environmental justice for disadvantaged communities without doubt.

Senator CARPER. That's encouraging.

Thank you very much.

One last question. And I'm going to turn to our Congresswoman, and then bring out our next panel.

General Graham, with respect to improving outreach and improving partnering, at the Water Resource Development Oversight, the hearing that our committee held in Washington last month, General Spellman acknowledged that the Corps has a consistency problem when it comes to district outreach and partnering activities with local project stakeholders.

Apparently some districts reach out to communities within their areas of responsibility proactively and they do it often, as you know.

While other districts largely leave communities in the dark to fend for themselves when it comes to identifying the opportunities that the Corps programs provide.

We have experienced this at times in Delaware, and I believe we are on a path to resolving this problem here.

Question. Would you please share a few of the details about the Corps' new partnering guidelines and play book and explain how this new guidance will help the Army Corps of Engineers be a better partner in the future?

Major General GRAHAM. Chairman Carper, again thank you for that question.

So the Corps doesn't do anything on its own, as we witnessed here in the State of Delaware.

Improving partnerships and transparency has been a priority for Lieutenant General Spellman from day one.

Our updated partnership guidance are focused on creating and maintaining sound partnerships to enable the safe delivery of quality projects that are on time and within budget.

Sound partnership requires proactive engagements at all echelons, and it's rooted in three mutually supported elements: Commitment, collaboration, and most importantly, collaboration.

And communication, sorry. Let me get that again.

Commitment, collaboration, and communication.

Senator CARPER. That's a lot of Cs.

Major General GRAHAM. It's a lot of Cs.

It's not corn, chicken, and corporations.

Senator CARPER. Say those Cs again.

Those are good.

Collaboration, right? What were the others?

Major General GRAHAM. Commitment and communication.

Senator CARPER. There you go.

Major General GRAHAM. So Senator—

Senator CARPER. That's also a secret for a long marriage.

Major General GRAHAM. It is.

Regarding—

Senator CARPER. That's a hearing for another day. Please.

Major General GRAHAM. Chairman, to some of the challenges we experienced here in Delaware, when you get new authorities—and I've got to pause here for a second to certainly thank this committee for getting a Water Resource and Development Act every 2 years. That allows my team to get good at taking those new authorities and putting those to work for the American people.

Getting implementation guidance to General Kelly so that we can put those to work.

So we greatly appreciate, sir, your leadership and having those bills every 2 years.

That's wonderful.

Senator CARPER. Teamwork makes the dream work.

Major General GRAHAM. Absolutely. The challenge we've got is I've got to help the divisions and the districts take those new authorities and put them to practice.

And that was probably my failing here in Delaware is that I didn't help out the Philadelphia district fast enough to understand some of these new authorities and bring up some of the expertise.

General Kelly has an amazing team down in Mobile that had that expertise. And it was my failing for being too slow to connect General

Kelly's expertise to the need here with the Philadelphia district to support Delaware.

So Senator, that's my commitment is to do a better job in making those connections.

Senator CARPER. Well, you have atoned for your sins, and we're going to go forward and do good work here. Thanks so much.

OK. Congresswoman, you're now recognized for the next hour.

Congresswoman ROCHESTER. Thank you, Senator. I think it's 5 minutes.

Senator CARPER. Oh, OK.

Congresswoman ROCHESTER. But I'll take an hour.

First of all, I want to thank you, Mr. Chairman, for your leadership. We know that here in Delaware, this is not new for you. These are not new issues for you. And we want to thank you for walking the walk and not just talking the talk and also for allowing us to participate in today's field hearing.

Senator CARPER. You can go ahead and take the full hour.

Congresswoman ROCHESTER. And I also want to thank all of our witnesses for your testimony.

And as the chairman was saying, all of our Cs of chickens and cards and chemicals. I don't know if you said chemicals, but chemicals. All of the different Cs. I see the mayor shaking his head on this one.

I also want to highlight another C, which is strong communities. And really one of the reasons we're here today and even doing this field hearing where we're doing it is because we have strong communities in Delaware that have spoken up about the needs and sounded the alarm about the sense of urgency for our economy, for our environment, and also for our quality of life.

And so I want to thank all of the community members, the mayors, the town councils², everyone who is participating today, our lieutenant Governor and Governor, because we are a strong community.

I'm also honored to participate in this important hearing and am proud to have introduced HR6705, the bipartisan SHORRE Act, which the—— I almost called you Governor. Harken back. Governor

Carney looked up very quickly. Which the chairman has already shared with you is the Shoreline Health Oversight Restoration Re-

silience and Enhancement Act, along with my colleague Representative Graves.

I think it's important to note that this bill, this legislation, is bicameral, meaning in the House and the Senate, which means it has a great chance of passing. And it's bipartisan.

And I also think that's important to antiparticlenote, particularly in this moment where people feel we can't problem solve. And we're coming together to find common ground to problem solve for our coastlines, our riverbanks, and our shorelines.

And so I want to thank you for your leadership.

And the goal of this legislation is simple. It's to address the ongoing flooding crisis that our coastal communities and riverbank communities continue to face.

And if I were asked what the Army Corps, what would I say to a fifth grader, I would say they're problem solvers. They help us to problem solve and help us to really attack these issues.

I want to thank you again, Senator Carper and also Senator Cassidy, for your leadership.

And I will have my first question. And my first question is to General Kelly. Shore protection and restoration projects that utilize nature-based features, such and dunes, are highly adaptable to climate change. However, it's unclear whether the Corps interprets existing authorities to permit projects to be modified in order to increase their resilience.

Having assumed command of the South Atlantic Division in 2020, you have firsthand knowledge of the Jacksonville district's efforts to modify federally authorized shore protection projects for enhanced resilience.

I have a three-part question for you. You might want to take a note.

How has the Jacksonville district worked to enhance the resiliency of federally authorized shore protection projects? Were there legal hurdles? That's No. 2. And are there authorities needed that could support rebuilding or repairing coastal projects at a higher level of resilience?

Brigadier General KELLY. Representative Blunt Rochester, thank you so much for that question.

I get excited about such things because innovative and efficient approaches to incorporate dunes in our existing projects is something we're working hard to do.

We have some challenges in the Jacksonville district. We had a re-nourishment effort program for over a dozen projects but only constructed one. And we were unable to construct because making betterments to projects funded with flood control and coastal emergency funds with construction funds is not something we could do.

But I've got some good news I want to share in that story, something I consider a win. We set precedent in trying to do this, in that when we better understood what funds we could use, we used that knowledge to bring several projects up to a modern standard. So we looked back. And we're now moving out with this under our regular program.

And so in this tale is good news that we're now using to improve the resiliency in Florida as a result of existing authorities.

And so to the third part of your question, additional authorities, I absolutely favor any effort that helps us build innovative climate resilient infrastructure, but we've also got to maximize the authorities we have. And that was the lesson I took from the aforementioned effort in Jacksonville.

Congresswoman ROCHESTER. Excellent.

So again, there are some authorities that we could use more, and then you will share with us additional ones that you'd like to see.

My next question is for General Graham.

And I like that answer because, as we were talking about going from gray infrastructure to green infrastructure and being more resilient. And I know there are some folks in the audience as well that I saw that focus on these issues as well.

General Graham, as you know, what works in Delaware doesn't necessarily work in other states.

Each project design and problem comes with unique environmental and engineering needs.

The Corps historically has had a rigid, perceived, some in here would say yes, I see a few shaking heads, top down approach to project design and execution. And in some ways, this top down approach is necessary, but a more ground up community-based approach is also needed to accurately identify projects and community needs.

What flexibilities are needed for the Corps to better incorporate community input and to account for individual project needs, while still dressing the needs of regions and the country as a whole?

Major General GRAHAM. Representative Blunt Rochester, thank you so much for that question. And there's multiple answers to it.

First and foremost, we've got to empower our divisions and our districts to get innovative.

We've got to ensure that we're empowering our divisions and their subordinate districts to reach out to communities to make sure that we're clearly listening to them.

Now, when we give authority and funding to the divisions to do these feasibility studies, we start a clock ticking on them. They've got to have them done in 3 years. We can extend it beyond that 3 years. Congress has given us the flexibility to do that with the approval of the assistant secretary.

So we want to work rapidly to find solutions to those problems, as you mentioned. But we also have to be mindful that sometimes reaching consensus with the communities who we're partnering with might take a little bit more time.

And so we're trying to strike that right balance of ensuring that we're delivering safely quality projects on time within schedule to include our feasible studies, but also acknowledging that reaching out and making sure that we're truly listening to communities, like in Charleston, might take a bit more time.

And that's why I'm using Charleston as an example. We went from environmental assessment to a full-blown environmental impact statement. And the big difference there, for the lay people, and I know this is an audience mainly of experts, but it's really that we're listening more and making sure that citizens have their voices heard about what we're doing in their communities.

Congresswoman ROCHESTER. As a follow up, one of the challenges that we've all talked about is time. There really isn't the time.

And I wonder as a part of the listening is also reaching out to communities to ask how to work better with them. I think that might be a good listening starting point as well. So I think that would be something that we'd love to follow-up on as well. What ways concretely and in an expeditious manner, because we know time is of the essence.

My next question is to you, General Kelly.

As you know, climate change is exacerbating coastal flooding across the country, but the coastlines of the United States and territories also face unique regional challenges.

The Corps completed the North Atlantic Coastal Comprehensive Study in 2015. And you are in the process of finalizing the report, as was mentioned, for the South Atlantic Coastal Study.

How do coastal protection and restoration challenges facing communities in the northeast and in the southeast of the Continental United States compare?

Brigadier General KELLY. Representative Blunt Rochester, having been a commander in the North Atlantic Division under General Graham's charge, I'm very familiar with that effort.

I was the commander in Norfolk. So much of the work that is now underway that General Graham and Mr. Conner will see, I was the commander when that commenced.

Very familiar with the challenges in the northeast, at least the southern boundary I guess if you use by a watershed in Norfolk. But now in the southeast.

I'd like to compare the North Atlantic Coastal Study with the South Atlantic Coastal Study that's underway now using that knowledge.

Both studies seek understanding. Both studies address coastal storm, flood risk to vulnerable populations, property, ecosystems, and infrastructure. I think that's the same in the northeast and in the southeast.

Perhaps the biggest difference when I think about the North Atlantic Coastal Study and where we are with the South Atlantic Coastal Study, is the North Atlantic Coastal Study was on the heels of Sandy. And though we had Irma and Maria in the territories, U.S. Virgin Islands and Puerto Rico, we have an opportunity to take that understanding that's not unique to the north or the south and apply it here in the Continental United States.

The other thing that I offer between the two studies, and as I use that as my attempt to compare and contrast, what we're doing different with the South Atlantic Coastal Study now is the tools are available, the coastal hazard system.

We're sharing and able to make decisions.

So whatever differences there may be, we're apprized, we're alive and aware, and we're communicating that to our partners.

So I think some of the communication that you asked us to do in a more aggressive way earlier, this particular effort is going to help us do that.

And I think we'll reap benefits from it.

Congresswoman ROCHESTER. Thank you.

Mr. Chairman, I am under my hour allotted time, and I yield back.

Senator CARPER. Thanks so much. Thanks for your wonderful stewardship in the State of Delaware in so many ways and for being here today and for providing your leadership in the House of Representatives as a member of the Energy and Commerce Committee.

There's a bunch of committees in the House. The committee that everybody wants to be on is the Energy and Commerce Committee. Not everybody can serve on it. She does, which is a good thing for Delaware and I think a very good thing for our country.

All right. Well, Generals, General Graham, General Kelly, we appreciate your continued dedication and service to this country.

I want to say I wish all of you could be sitting up here with us and just watching the expressions on their faces, their eyes, as they talk about the work, the responsibilities that they have and the relish with which they address them.

And I like to say everything I do, I know I can do better. And we've heard from the Army Corps that as good as they are, they know they can do better as well, and that we're in this together, and together we're going to make a huge impact and a huge difference at a time when that's very much needed and expected by the people in this country.

So thank you.

I never ask when we hold hearings in Washington for people to give a round of applause for a panel of witnesses. I don't think I've ever done that. But the Army Corps of Engineers are extraordinarily important in this State and such great huge help in this State. I'm going to refrain from applauding, but I want everybody else to. Go ahead, give them a nice round of applause.

All right. That's enough. Never enough.

Thank you so much. And you're now excused.

And we're going to transition to our second panel. They'll get a big round of applause, too, I'm sure when they finish.

We're delighted to welcome our second panel of witnesses, which consists of four unique voices in the coastal community. This includes two sitting Governors, a mayor, and the director of a non-profit dedicated to coastal State issues.

If you'll come up and join us, that would be great.

First, let me warmly welcome not one but two Governors, two distinguished Governors, from the State of Louisiana, from the State of Delaware.

Governor Edwards took office in 2016 as I think the 56th Governor of Louisiana. He did such an outstanding job, that Louisianians elected him to a second term in 2020. That doesn't always happen in this business, especially when the kind of challenges that we face today, as you face today as Governors.

Before taking office, Governor Edwards, a West Point graduate, served as lieutenant in the U.S. Army, eventually rising to command a rifle company in the 82d Airborne Division before stepping down with the rank of captain.

It is an honor to have you here with us in the First State, Governor Edwards. You're recognized for your remarks.

Common sense, practical, smart, surrounds himself with really smart people, respected by Governors across the Nation, and certainly respected by the people within his own State.

His senators, who are both Republicans, speak very highly of this man, who is a Democrat.

We're delighted that you're here. And along with John Carney, somebody who is really good at working across the aisle and getting stuff done.

Governor, welcome aboard.

Governor EDWARDS. I'm not sure I'm on. I think I am now.

Senator CARPER. There we go.

STATEMENT OF LOUISIANA GOVERNOR JOHN BEL EDWARDS

Governor EDWARDS. Thank you, Senator Carper, Representative Blunt Rochester. It's great to be here with you all this morning. I appreciate the opportunity to be here with my friend, Governor Carney, as well.

I think your committee's focus on restoring shorelines and riverbanks to address climate change is very important. It resonates with me as we strive in Louisiana to save our coast from what is a land loss crisis.

Additionally, I'm grateful that you and your colleagues passed a Disaster Supplemental to help us recover from Hurricanes Ida and Laura and Delta, as well as bipartisan infrastructure law.

This funding has given us a historic opportunity to make significant progress for our coasts, and we thank you very much.

In Louisiana, we obviously depend upon a very close relationship with the Army Corps of Engineers. Our economy, our environment rely upon their success in achieving their mission to promote navigation, provide flood control, and restore aquatic ecosystems.

Coastal and riverine areas show the need to manage for all three independent objectives as impacts related to climate change become increasingly apparent and severe.

I commend the committee for considering how to improve the synergy between the Corps mission and the need to restore our Nation's shorelines and riverbank ecosystems. I endorse the heightened focus on these coastal issues and encourage the Corps to elevate its commitment to coastal protection and restoration.

As you may know, Louisiana was built largely by the movement of the Mississippi River as it spread out, the collected soils from across the drainage basin that now covers 31 states and two

Canadian provinces. Yet, that river no longer sustains our coastal landscape.

Since 1930, Louisiana, as you noted, Mr. Chairman, Louisiana has lost 2,000 square miles of coastal wetlands. And as you also noted, that is about the size of Delaware.

The loss began following the great flood of 1927, when Congress charged the Corps with ensuring navigation and providing flood control.

The Corps succeeded. But interventions such as levies unfortunately keep the Mississippi River sediment trapped until it spills into the Gulf of Mexico. And so it no longer provides land sustaining benefit to the coast. It doesn't replace that sediment and

nourish our coastline. And as a result, we continue to lose a football field every 100 minutes.

If it weren't for recent hurricanes, however, our State was poised to start building more land than we were losing for the first time since 1930. But just in Hurricane Ida, we lost 106 square miles of land. Now, some of that will naturally regenerate, but it still will be a net loss at the end of the day.

With each acre converted to open water, our vibrant ecosystems shrink, our infrastructure becomes more exposed, our communities face heightened risk, and our natural carbon sinks lose capacity to offset greenhouse gas emissions. Every day the importance of restoring our coastal and riverine ecosystems becomes more evident.

Coastal land loss is an immediate existential threat to our State, and climate change will only intensify the impact.

While sediment starvation and subsidence have been major drivers of historic land loss, sea level rise from climate change will become a dominant cause of our coastal wetland loss in the near future, magnified by more frequent and more intense storms.

For decades, coastal land loss was a slow-moving catastrophe that was left unaddressed.

It took the devastating hurricane season of 2005, you'll always remember Hurricanes Katrina and Rita, to galvanize our State into action.

We created the Coastal Protection Restoration Authority, call it the CPRA, to be the single entity in the State charged with integrating hurricane protection and coastal wetland restoration. We recognize that protecting communities and coastal ecosystems do go hand in hand, and strategic planning is foundational.

CPRA develops, with significant input from the public and stakeholders, a science-based coastal master plan every 6 years. And each update has been adopted by our State legislature with unanimous support.

That master plan calls for coastal protection and restoration projects over 50 years of projected investment of \$50 billion. And I am proud to say that we are now committing over a billion dollars each year to improve our coast.

Reconnecting the Mississippi River in order to harness the sustaining land building power of its sediment is a cornerstone principle of the Coastal Master Plan. And I'm also happy to say that we're making great progress.

CPRA is in the final year of Federal permitting for the \$2 billion Mid-Barataria Sediment Diversion Project that would reconnect the

Mississippi River to the Barataria Bay Estuary, which has the highest rates of land loss in south Louisiana. This project is a critical component in our continued recovery from the Deep Water Horizon oil spill, also.

The State has entered the Federal permitting process for a similar project on the east bank of the Mississippi River, the Mid-Breton Sediment Diversion Project. And these projects have been supported by three consecutive Presidential administrations through the permitting process.

However, even with that support, getting to the decision point has been a real challenge.

One way this committee could help would be to encourage Federal agencies, such as the Corps, EPA, and the Council on Environmental Quality, to ensure timely decisionmaking.

Simply put, we're in a race against time, and we can't afford unnecessary delays. The projects are designed to improve the overall environment. And the sooner they are constructed, the sooner our coastal communities can experience their benefits.

After Hurricane Katrina, Louisiana greatly benefited from the Federal investments in the Hurricane Risk Reduction System, also known as HRRS.

And we want to thank you all for the very generous help that you provided to our State. It provides hurricane protection and resiliency to the greater New Orleans area.

And your committee heard how valuable the investment proved to be after Hurricane Ida made landfall this past August as one of the strongest storms to ever strike Louisiana.

The previous storm that matched its intensity was 1 year before, which gives evidence to the increasing frequency and severity of our weather.

Your committee heard how important it was and how well it performed withstanding the storm and preventing billions of dollars of property damage.

The strengthened system protected hundreds of thousands of people and tens of thousands of businesses from the worst impacts of the storm, and it was the first major test of the Hurricane Storm Damage Risk Reduction System since it was built.

And it absolutely performed as it was intended to.

And I'm very proud that General Spellman testified to this committee that a key element of the success of that system during Hurricane Ida was the presence of a number of restoration projects that had been constructed by the State and by local government.

I encourage the Corps to seek additional opportunities to connect ecosystem restoration projects with protection projects. Granting credit to restoration projects within the same area of the protection projects that require mitigation achieves this goal.

And we have an example in Louisiana right now under consideration. It would be the use of the Maurepas Swamp Freshwater Diversion Project as mitigation for the west shore Lake Pontchartrain hurricane protection system. The project would provide in-basin mitigation by sustaining 45,000 acres of swamp, optimize cost savings, and reduce risk to the west shore levy system once it's constructed.

Through our Coastal Master Plan, Louisiana has articulated a clear, widely supported vision for a more sustainable coast. And I'm hopeful that the Corps will work closely with us to achieve it.

And I want to tell you we're no longer just reacting to disasters. We're taking action. Earlier this month, the Climate Task Force that I established completed its work and submitted the first ever Climate Action Plan for our State, which is a balanced, implementable plan that charts a comprehensive pathway to net zero. The plan received unanimous backing from the members of the task force and it's the first Climate Action Plan created by any State in the deep south.

I've included a copy of the executive summary of our Climate Action Plan as an attachment to my testimony.

[The prepared statement of Louisiana Governor Edwards]

**TESTIMONY BY
THE HONORABLE JOHN BEL EDWARDS
GOVERNOR, STATE OF LOUISIANA
TO THE
U.S. SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
ON
Examining Shoreline and Riverbank Restoration in the Face of Climate Change
February 23, 2022**

Mr. Chairman, thank you for the opportunity to testify today in the great state of Delaware alongside my friend and colleague, Governor Carney. Your Committee's focus on restoring shorelines and riverbanks to address climate change resonates with me, as we strive in Louisiana to save our coast from its land loss crisis.

Additionally, I am grateful that you and your colleagues passed a disaster supplemental to help us recover from Hurricanes Ida, Laura, and Delta, as well as the bipartisan Infrastructure Investment and Jobs Act. This funding has given Louisiana a historic opportunity to make significant progress for our coast.

In Louisiana, we depend upon a close partnership with the U.S. Army Corps of Engineers (the Corps). Our economy and environment rely on the Corps successfully achieving its mission to promote navigation, provide flood control, and restore aquatic ecosystems. Coastal and riverine areas show the need to manage for all three interdependent objectives as impacts related to climate change become increasingly apparent.

I commend the Committee for considering how to improve the synergy between the Corps mission and the need to restore our nation's shorelines and riverbank ecosystems. I endorse the heightened focus on these coastal issues and encourage the Corps to elevate its commitment to coastal protection and restoration.

LOUISIANA: A COASTAL STATE WITH A LAND LOSS CRISIS

Louisiana was built largely by the movement of the Mississippi River, with its boundary shores established alongside the Gulf of Mexico. South Louisiana is the delta of the Mississippi

River, as its distributaries spread out the collected soils from across a drainage basin that now covers 31 states and two Canadian provinces.

Yet the Mississippi River no longer sustains our coastal landscapes. Since 1930, Louisiana has lost 2000 square miles of coastal wetlands, a land mass the size of Delaware.

This loss began following the Great Flood of 1927, when Congress charged the Corps with ensuing navigation and providing flood control. The Corps has succeeded, but interventions such as levees unfortunately keep the Mississippi River sediment trapped until it spills off into the Gulf of Mexico, providing no land-sustaining benefit to the coast.

We continue to lose an average of a football field of coastal wetlands every 100 minutes. But we are making real progress. If it were not for recent hurricanes, our state was poised to build more land than it was losing for the first time since the River was leveed.

With each acre converted to open water, our vibrant ecosystems shrink, our infrastructure becomes more exposed, our communities face heightened risk, and our natural carbon sinks lose their capacity to offset greenhouse gas emissions. Every day the importance of restoring our coastal and riverine ecosystems becomes more evident.

Coastal land loss is an immediate, existential threat to Louisiana and climate change will only intensify the impact. While sediment starvation and subsidence have been major drivers of historic land loss, sea level rise from climate change will become a dominant cause of coastal wetland loss in the near future, magnified by more frequent, intense storms.

LOUISIANA: A MODEL OF INTEGRATED PROTECTION AND RESTORATION

For decades, coastal land loss was a slow moving catastrophe left unaddressed. It took the devastating hurricane season of 2005, with Hurricanes Katrina and Rita, to galvanize the state into action. We did so by creating the Coastal Protection and Restoration Authority (CPRA) to be the single state entity charged with integrating hurricane protection and coastal wetland restoration. Louisiana recognized that protecting communities and coastal ecosystems go hand in hand.

Strategic planning is foundational for integrating protection and restoration. CPRA develops, with significant input from the public and stakeholders, a science-based Coastal Master Plan for the protection and restoration of our coastal wetlands. This Comprehensive Master Plan

for a Sustainable Coast was first adopted by the Louisiana State Legislature in 2007 and is now updated every six years. Every update has been adopted by our state legislature with unanimous support. The Coastal Master Plan calls for coastal protection and restoration projects over 50 years at a projected cost of \$50 billion. I am proud to say that we are now committing over a billion a year on projects to improve our coast.

The coastal restoration that Louisiana achieves through our Coastal Master Plan projects will provide significant benefits to the nation. Restored coastal wetlands will provide additional protection to communities inland through the reduction of storm surges. These areas can operate as carbon sinks, which recent studies suggest can store more soil carbon than forests. The healthy marshes also provide habitat for migratory birds and nursing grounds for fisheries.

RECONNECTING THE RIVER TO LOUISIANA

Reconnecting the Mississippi River in order to harness the sustaining, land-building power of its sediment is a cornerstone principle of the Coastal Master Plan. We are making historic progress on these large-scale restoration endeavors. CPRA is in the final year of federal permitting for the \$2 billion Mid-Barataria Sediment Diversion Project that would reconnect the Mississippi River to the Barataria Bay estuary, which has the highest rates of land loss in South Louisiana. This project is a critical component in our recovery from the *Deepwater Horizon* oil spill. The state has entered the federal permitting process for a similar project on the east bank of the Mississippi River, the Mid-Breton Sediment Diversion Project.

Even with this support, getting to the decision point has been a challenge. Fortunately, these projects were the first large-scale ecosystem restoration projects to be added to the Federal Permitting Improvement Steering Council (FPISC) permitting dashboard. Through this venue, the project has been supported by three consecutive presidential administrations. One way this Committee could help would be to encourage federal agencies, such as the Corps, EPA, and the Council on Environmental Quality, to ensure timely decision-making. We cannot afford delays. These restoration projects are designed to improve the overall environment and the sooner they are constructed, the sooner our coastal communities can experience their benefits.

LOUISIANA PROJECTS THAT INTEGRATE PROTECTION AND RESTORATION

After Hurricane Katrina, Louisiana greatly benefitted from federal investments in the hurricane risk reduction system (also known as HSDRRS) which provides hurricane protection and resiliency to the Greater New Orleans area. Your Committee heard how valuable the investment proved to be after Hurricane Ida made landfall as one of the strongest storms to ever hit Louisiana's coast. HSDRRS performed well, withstanding the storm and preventing billions of dollars in property damage. The strengthened system protected hundreds of thousands of people from the worst impacts of the storm. This was the first major test of HSDRRS since it was built, and it performed as it was intended to. I am also proud to hear that Lt. Gen. Spellmon testified to this Committee that a key element of the success of HSDRRS during Hurricane Ida was the presence of a number of complementary restoration projects constructed by the state.

I encourage the Corps to seek additional opportunities to connect ecosystem restoration projects with protection projects. Granting credit to restoration projects within the same area of protection projects that require mitigation achieves this goal. One such example in Louisiana would be the use of the Maurepas Swamp Freshwater Diversion project as mitigation for the West Shore Lake Pontchartrain hurricane protection system. The Maurepas Swamp project, funded through RESTORE Act dollars, will reestablish the connection between the freshwater and sediment in the Mississippi River and adjacent swampland to sustain 45,000 acres of swamp. The project would provide in-basin mitigation while optimizing cost savings and reducing risk to the West Shore Lake Pontchartrain system once constructed.

I would be remiss not to mention another project in Louisiana that meets the dual objective of community protection and coastal restoration: the Morganza to the Gulf Hurricane Protection project. Thankfully, the Biden Administration and Assistant Secretary of the Army for Civil Works Michael Connor dedicated \$378 million to the project from the Infrastructure Investment and Jobs Act. This complements over \$500 million in state and local funds dedicated to beginning construction prior to significant federal participation. When fully constructed, the Morganza project will protect over 200,000 residents, sustain over 1,700 square miles of marsh, and secure an area vital to America's economic interests and the nation's energy transition.

The Morganza project has a unique design to maximize protection to surrounding coastal wetlands. As a "leaky levee," the system will only be closed when facing severe storms. The

design allows over half a million acres in vegetated coastal wetlands within the Barataria-Terrebonne estuary to be sustained through the natural ebb and flow of the tide. The system is in a large part self-mitigating, as initial studies indicated that the wetlands within the system performed better than those outside. Furthermore, the communities in the study area are truly on the front lines of climate change as they face the highest relative sea level rise in the nation at over three feet per 100 years. I encourage the Corps to account for these factors as it evaluates future spending plans.

Through our Coastal Master Plan, Louisiana has articulated a clear, widely-supported vision for a more sustainable coast. I am hopeful that the Corps will work closely with us to achieve it.

THE LOUISIANA CLIMATE ACTION PLAN

Louisiana is no longer just reacting to disasters; we are taking action. In August 2020, I issued an executive order that established the goal of net zero greenhouse gas (GHG) emissions by 2050 and established a Climate Initiatives Task Force to develop a Climate Action Plan for Louisiana. Through this task force, we engaged those in academia, industry, the private sectors, local and state government, environmental and community justice roles, and the public. Over the course of 49 public meetings, the group developed a plan for our energy producing state to achieve net zero GHG emissions by 2050 while maintaining economic competitiveness. The plan spans the entire economy and incorporates vital considerations like improving public health and quality of life, promoting a more equitable society, strengthening the economy and workforce, conserving natural resources, and adapting to a changing climate. Our plan calls for continued emphasis on restoring and protecting our wetlands through nature-based solutions, which can naturally sequester carbon dioxide while reducing storm surge and enhancing vital ecosystems.

Earlier this month, the Climate Task Force I established completed its work and submitted the state's first-ever Climate Action Plan, a balanced and implementable plan that charts a comprehensive pathway to net zero. The plan received unanimous backing from members of the Task Force, and it is the first climate action plan created by any state in the Deep South. A copy of the Executive Summary of our Climate Action Plan is attached to this testimony.

LOUISIANA RECOMMENDATIONS FOR SPECIFIC FEDERAL ACTIONS AND
CHANGES IN FEDERAL POLICY, INCLUDING THE SHORRE ACT

Mr. Chairman, this is the overarching view of the challenges Louisiana faces from major environmental threats and how we are responding to them. Alignment with the Corps on this strategy is crucial.

I commend you, Senator Cassidy, Representative Blunt Rochester, and Representative Graves for introducing the Shoreline Health Oversight, Restoration, Resilience, and Enhancement Act, known as the SHORRE Act. The bill would apply the urgency Louisiana has to address the challenges along our shores and rivers nationwide.

The SHORRE Act supports Louisiana by prioritizing the Louisiana Coastal Area projects, authorizing Upper Barataria Basin Risk Reduction System, and approving important modifications to the Lake Pontchartrain and Vicinity project and the West Bank and Vicinity project. I am grateful to see that the SHORRE Act supports the longstanding position of the state and Congress that the Mississippi River Gulf Outlet should be restored at full federal expense. For too long this major restoration project has been at a standstill due to the Corps interpretation of federal statute.

The SHORRE Act could facilitate greater synergy between the Corps and the state by allowing the Corps to select appropriate state projects to be credited as mitigation. I encourage the Committee to look for even more avenues for the Corps to properly recognize state efforts for crediting purposes, including by extending existing authorities.

Furthermore, I appreciate the bill's direction to the Corps to provide leadership to conduct the Lower Mississippi River Comprehensive Management Study. The study would allow the Corps to use the best available science to manage the river in a way that meets the navigation, flood control, and ecosystem needs. These determinations are vitally important for Louisiana as the furthest downstream state. It would also jumpstart key Coastal Master Plan projects like the Ama sediment diversion and the Union freshwater diversion that could provide multiple benefits, including reducing the need to operate flood control structures like the Bonnet Carré Spillway. I hope the Committee can ensure that the study is completed on time, as it would be appropriate to finish the study by 2027, the 100th anniversary of the Great Flood of 1927.

ADDRESSING RESTORATION ON PRIVATELY HELD COASTAL LANDS

Nearly three quarters of Louisiana's coastal lands are held in private ownership. Louisiana cannot solve its coastal land loss crisis without engaging with willing landowners to find restoration solutions that work for their goals. Fortunately, many of the property owners value our efforts to save the coast. They want to be helpful. Some are even offering to provide land at no cost to the state as they have done for over thirty years for state and Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) program projects.

However, Corps practice often prevents these agreements, despite guidance documents and statutory provisions that would allow otherwise. The Corps requires that full fee title be obtained over private land before a federal investment in wetlands protection or restoration can be made. Full title is harder and costlier to obtain, sometimes so much so that the project no longer can meet the cost benefit ratio necessary to move forward. This barrier blocks many worthwhile endeavors from going forward.

In such situations, Louisiana has been able to obtain conservation easements and other such agreements that are easier to obtain and less costly than full fee title to these lands. We have found that these agreements, which are widely used throughout the nation in land conservation situations, provide more than adequate protection of the state's investments. These agreements allow us flexibility to engage cooperatively with private landowners in public-private partnerships for land use. These agreements should not only assure the restoration and conservation of the land, but also allow the continuation of traditional co-existing, non-destructive, and profitable uses of the land. Landowners would still be able to fish, hunt, trap, farm oysters, manage alligators and other wildlife, and conduct ecotourism. We should encourage friendly relationships with private landowners to maintain the traditional symbiotic working coast relationship that the citizens of coastal Louisiana have shared with the lands and waters of the state for well over three centuries.

Given our experience and urgent need, I ask that Congress direct the Corps, when working with the state of Louisiana on coastal wetlands protection and restoration projects, to make agreements with landowners that are less than full fee title. Ideally, this program in Louisiana could be a demonstration project to show that allowing less than fee title interests to apply could spur much greater activity and results on coastal restoration and protection.

INCREASING COASTAL FUNDING TO STATES

Funding is paramount to achieving our restoration goals. Revenue shared from the Gulf of Mexico Energy Security Act (GOMESA) has been an essential funding source for coastal restoration and protection in Louisiana. In fact, our state's constitution dedicates all such funds to coastal restoration and protection. However, for years we have received a very limited amount of funds compared to the total revenue collected.

I implore members of the Committee and across Congress to allow the Gulf States to access a fair share of the GOMESA revenues from energy development to save our coastal ecosystems. In Louisiana, this energy production has also contributed to significant land loss. As it stands, the state receives funding through GOMESA that addresses many coastal needs, but the available funding will not be adequate to meet the scale of the challenges. This legislation makes long overdue improvements to GOMESA and, for the first time ever, would establish revenue sharing for offshore wind production. Offshore wind is something that Louisiana is strongly pursuing, just like Delaware is under Governor Carney's leadership.

Should Congress adopt the S.2130, the Reinvesting in Shoreline Economics and Ecosystems Act of 2020, as introduced by Senator Whitehouse and Senator Cassidy, then Louisiana would have a fighting chance to address these problems. While this bill is in the jurisdiction of the Senate Energy and Natural Resources Committee, this Committee could assist by clarifying that the Corps can accept GOMESA funds as the non-federal sponsor's cost share.

CONCLUSION

Mr. Chairman, Louisiana has developed an ecosystem restoration program that is as comprehensive and forward thinking as any other such plan in the world. We are attempting to restore a coastal ecosystem where over two million people live and where billions of dollars of industrial investment and critical infrastructure exist. The importance of our working coast to our state and the country cannot be overstated. We must restore and protect it.

Ensuring that the Corps has the authority and direction to increase its focus on coastal, shoreline, and riverine ecosystems is of the utmost importance to the overall sustainability of the State of Louisiana.

Thank you for the opportunity to be here today. I look forward to answering any questions from the committee.

Mr. Chairman, this is the overarching view of the challenges Louisiana faces from major environmental threats and how we're responding to them. Alignment with the Corps is absolutely critical to our success. And therefore, I want to commend you and Senator Cassidy, Representative Blunt Rochester, and Representative Graves. This really is a Louisiana Delaware—or I should say a Delaware Louisiana effort.

The bill would——

Senator CARPER. We did come first.

Governor EDWARDS. I understand. The bill would apply the urgency that Louisiana has to address the challenges along our shores and rivers nationwide. And I greatly appreciate the provisions of the SHORRE Act that would help my State, such as authorizing the upper Barataria basin risk reduction system funding ecosystem restoration for (inaudible), helping the State receive credit from the Corps for the projects that we do, and conducting the lower Mississippi River Comprehensive Study.

As I detail in the written statement, I also encourage the committee to direct the Corps to use its existing authority to be more flexible on the land rights it requires for restoration and mitigation.

Louisiana has worked well for decades with private land owners on many restoration projects without purchasing land outright. Conservation easements are entirely sufficient. They're faster, they are cheaper, and they allow for a more favorable cost benefit ratio for these important projects. So I encourage the Corps to adopt the same approach.

Obviously funding is paramount to achieving our goals. Revenue shared from offshore oil and gas development through GOMESA has been an essential funding source for coastal restoration protection in Louisiana. That's how we've gotten to over a billion dollars a year in these investments.

And I want you to know our constitution dedicates every dollar to coastal restoration and protection.

However, for years, we've received a very limited amount of impact assistance compared to the revenue collected with respect to how interior states are treated, I should say.

While this bill is not in your committee's jurisdiction, I do implore you to support the Rise Act. The legislation makes long overdue improvements to GOMESA. And for the first time ever, would establish revenue sharing for offshore wind production, which is important for your state and for mine. Offshore wind is something that we are strongly pursuing.

Mr. Chairman, we've developed an ecosystem restoration program that is as comprehensive and forward thinking as any other such plan in the world. We are attempting to restore a coastal ecosystem where over 2 million people live, where billions of dollars of industrial investment in critical infrastructure exists. The importance of our working coast to our State and to the country simply cannot be overstated. And so we must restore it, we must protect it.

And ensuring the Corps has the authority but also the direction to increase its focus on coastal shoreline and river and ecosystems

is of the utmost importance to the overall sustainability of the State of Louisiana.

So I thank you for the opportunity to be here today, and I look forward to receiving and answering your questions.

Senator CARPER. Governor Edwards, we're delighted to be your partner in all of this and other issues as well.

How many people here are from Delaware?

Raise your hand. How many here have actually personally met Governor John Carney? How many of you think you know him pretty well? I'll mention a couple of things that you may not know and then yield to him.

We talked a lot about football fields.

Every 100 minutes they lose in Louisiana a piece of land the size of a football field to the sea.

John Carney knows a thing or two about football fields. And Governor Edwards is a high school football star. He was a great athlete, basketball, football, other sports. But he was All State quarterback for us. Played in the Blue Gold Game.

He went onto school. He was wait listed at Ohio State, but he managed to get into Dartmouth somehow and was a stellar athlete there. All Ivy defensive back as I recall there.

And came back to Delaware. And my recollection is he was great at resume, but a guy named Tubby Raymond was our football coach for like ever at the University of Delaware. 300 wins, which, as you know, is a lot of wins for college football. And John Carney was one of his assistants during part of that time.

And later on, worked as a top aide in Delaware to Joe Biden when Joe was a mere mortal.

He was our U.S. Senator.

Ended up helping run New Castle County, where about two-thirds of our people live. And as the deputy chief of staff to a lucky Governor at one time, he negotiated the purchase of the Port of Wilmington from the city of Wilmington, which had no money to invest in the port, and engineered the turnaround for the Port of Wilmington, which is now just a standout port and one we're enormously proud of.

He helped lead a team of Delaware officials to Wall Street and convince the major rating agencies, Moody's, Standard and Poor, and Fitch, for the first in the history of Delaware, to raise our credit rating to a AAA. Proud it's rating that we continue to enjoy.

Other than that, he's not done much. That's just a very brief overview of what he's done. But the real test for John Carney was to be Governor during the worst pandemic in 100 years.

I was fortunate to be Governor during eight good years. Started hard, and then it got better and better and better. But he's had to lead us through incredibly difficult, and he's done it with the heart and with great communication and a willingness just to be courageous and to provide the leadership by example that we so admire in our staff.

Other than that, can you think of anything else good to say? That just scratches the surface.

That just scratches the surface.

But he's now our Governor. Serves us—we have only one representative, and that's now Lisa. But served as our Congressman for 6 years and did so extraordinarily.

Go through the Wilmington train station.

There's a great photograph of John Carney, Chris Coons, and I walking arm in arm down the platform of the train station, a shot taken of us from behind.

And it's one of my all-time favorites.

And what I will say to other, when I get off the train at the end of the day and we have people from other states, they say to me, we walk by the pictures, beautiful pictures, and say who are those three guys. And I tell them who. And they say John Carney, you're so lucky that he's your Governor. You know, we really are. We really are.

John, welcome. Thank you for joining us today. Thank you for being a staunch advocate for coastal funding and for fighting to help keep our beaches and keep them some of the finest in the world.

And you're recognized for your opening statement. Thank you.

STATEMENT OF DELAWARE GOVERNOR JOHN CARNEY

Governor CARNEY. Thank you very much, Senator Carper. I almost called you Governor Carper there. When somebody mentioned that earlier, I was ready to say you want to be Governor again, you can have it.

Thanks for that introduction. It reminds me of something my brother-in-law says, which is the older we get, the better we used to be. I think in my case, people, it's been so long, people don't remember. So they can't verify the facts there.

I've had a great example in leadership with you, Mr. Chairman. And I appreciate everything that you've done for me in my public service.

Senator CARPER. John Carney is oftentimes referred to as one of the two finest Governors we've ever had.

Governor CARNEY. I'm really delighted to be here with Governor Edwards. We are colleagues in the National Governors Association.

He's one of the most respected Governors in our country, for the reasons that you outlined and you can hear his command of the material in his opening statement. We certainly appreciate his service to our country. He's a graduate from the U.S. Military Academy at West Point and his service there.

But he's been a great leader in a very difficult time for the State of Louisiana. I'm just delighted that he's here with us.

I'm also happy to be here with so many of the elected officials that are our partners. You're going to hear from the mayor here at Slaughter Beach. I missed the tour yesterday. Apologize for that. But they are clearly partners in all this work.

I couldn't recognize most of them because they had masks on, but I did see Mayor Becker across from me. And he's a great partner in Lewes.

Last year, the Department of Natural Resources and Environmental Control launched Delaware's Climate Action Plan, Governor. We heard about Louisiana's Climate Action Plan. And I would recommend this to every Delawarean. It's got great informa-

tion. It's really an easy read. It sets the technical standards right at the top.

It was the result of a long process involving residents, businesses, and technical experts. Congresswoman, to your point about community engagement.

This roadmap shows how Delaware can prepare for climate change and must prepare for climate change in the decades ahead by reducing two main objections. Reducing carbon emissions and focusing on coastal resilience, which is what this hearing is about and your legislation.

In 2017, Delaware joined the US Climate Alliance with many other states and local governments, committing to reduce our carbon emissions by at least 26 percent by 2025 over 2005 levels. We're not there yet, but we're making progress.

Right now, the estimate is that we're between 18 and 19 percent reduction. So we do have some work to do there.

We're here today, though, to talk about the impacts of sea level rise caused by climate change. Delaware has already experienced over one foot of sea level rise at the Lewes tidal gauge since 1900. So over the last century, a foot of sea rise there in Lewes. By mid century, sea levels are projected to rise another nine to 23 inches. And by the next century, up to an additional five feet.

This threatens our Atlantic beaches and bay communities, neighborhoods, businesses. And for the residents of those communities importantly, it threatens their way of life.

Delaware, as has been mentioned, is our country's lowest lying State. Governor, you probably thought you were the lowest lying State.

And I guess in some areas, you're below sea level best I could tell.

Here in Sussex County, tourism employs 17,000 people and contributes \$213 million in State and local taxes. These might not sound like big numbers to our friends in larger states, including in Louisiana, but those are big numbers for the State of Delaware, with just under a million residents.

During COVID-19, we've made decisions with the understanding that you need to have a healthy community to have a healthy economy. You got to strike a balance there. It's also true that you need to have a healthy environment to have a health economy. One, in particular in this case, affects the other.

To that end, we're grateful, extremely grateful for the investments in infrastructure that are coming to Delaware through the bipartisan infrastructure bill that both of you were part of passing, championed by you and by the president.

And I know it achieves exactly what President Biden intended, which was a bipartisan piece of legislation that enables us to build back better. And I think those words hit the nail on the head when it comes to climate change, because these investments will give us the opportunity to build back better by embedding climate resiliency in all infrastructure projects and focus on reducing carbon emissions.

This will help us meet those goals for carbon emission reductions by 2025, because it includes a \$17 million investment, which is a big number in Delaware, to expand Delaware's electric vehicle

charging network. And this is a critical investment as we move toward more, to electric vehicle transportation in our State. And it's critical to us meeting those carbon emissions.

Congresswoman Blunt Rochester mentioned the idea of nature-based features in resilience projects. And we know of one. We have an active one right now in Prime Hook Wildlife Refuge, which is a Federal-owned asset. And they've restored the dunes which were destroyed by a number of northeast storms over the last ten or more years.

They have restored those dunes with the expectation that they will let Mother Nature runs its course in the years ahead, as opposed to continuing to restore the dunes on a kind of regular basis as the storms come through.

You can see the effect there more dramatically I think than anywhere because the parking lot that used to be at the edge of the beach is now 20 yards out into the Bay. And that's really what the kinds of effects that we're talking about here in our State.

The ocean and bay beaches are part of Delaware's history. The Delaware Bay was a lifeline and resource during the early Colonial period. It fueled transportation and a maritime economy that ultimately supported the foundation of our State.

Today we are approaching a new normal under climate change. Storms, hurricanes, and other weather events are more prevalent. We're seeing so-called 100-year floods every few years instead of once in a lifetime it seems.

When I took the oath of office to become Delaware's 74th Governor, I pledged not only to uphold our constitution, but to, and I quote, respect the right of future generations to share the rich historic and natural heritage of our State.

Both of you have taken that pledge before. We live in a beautiful State. And we should take care to preserve that heritage as we pledged to do. That includes upholding the goals laid out in our Climate Action Plan, incorporating the action plan's objectives into the resources provided by the Federal bipartisan infrastructure bill. And we will do that.

We can only do this by limiting carbon emissions. We need to expand clean and renewable energy, put in place energy efficiency measures, transition our transportation sector to zero emission vehicles, and reduce and manage greenhouse gases beyond carbon dioxide.

We also need to prepare for the environmental challenges we're just now beginning to see. Resiliency efforts, like improving real time data collection of coastal flooding and providing training tools and technical assistance on climate change impacts may sound simple, but they're critical for us to be prepared and to act.

Let me end by thanking both of you for your leadership for our great State. You, Senator Carper, for being a mentor, for your leadership of this committee, and for this piece of legislation that will help us as we attempt to implement

Delaware's Action Plan and address the coastal resiliency issues that we'll need to address.

Thanks very much.

[The prepared statement of Governor Carney follows:]

TESTIMONY BY
THE HONORABLE JOHN CARNEY
GOVERNOR, STATE OF DELAWARE
TO THE
U.S. SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
ON
Examining Shoreline and Riverbank Restoration in the Face of Climate Change
February 23, 2022

Last year, the Delaware Department of Natural Resources and Environmental Control launched Delaware's Climate Action Plan – a result of a year-long process involving residents, businesses, and technical experts. This roadmap shows how Delaware can prepare for climate change in the decades ahead by reducing carbon emissions and focusing on resilience. In 2017, we signed on to the U.S. Climate Alliance – committing to reduce our carbon emissions by 26 to 28 percent by 2025. We're not there yet, but we're making good progress.

We are here today to talk about the impacts of sea level rise caused by climate change. Delaware has already experienced over one foot of sea level rise at the Lewes tide gauge since 1900. By midcentury, sea levels are projected to rise another nine to 23 inches and by 2100, up to an additional five feet.

This threatens our beach and Bay environments, neighborhoods, and businesses. And for residents of these communities, it threatens their way of life.

Delaware is our country's lowest-lying state, and the effects of sea-level rise pose significant risks across our State's economy.

In Sussex County, tourism employs 17,000 people and contributes \$213 million in state and local taxes. These might not sound like big numbers to our friends in other states, including my friend Governor Bel Edwards in Louisiana, but those are big numbers for here in a state of one million residents.

During COVID-19, I made decisions with the understanding that you need to have a healthy community to have a healthy economy. It is also true that you need to have a healthy environment to have a healthy economy.

To that end, we're grateful for the investments in infrastructure that are coming to the state, championed by our federal delegation, including EPW Chairman Senator Carper. The infrastructure bill achieves exactly what President Biden intended – a bipartisan piece of legislation that enables us to 'build back better' for the next decade.

These investments will address the impacts of climate change by embedding climate resiliency in all infrastructure projects and focus in on reducing carbon emissions. This includes a \$17 million investment to expand Delaware's electric vehicle charging network.

To paint the picture for you of what climate change means for us, I'm going to talk a little bit about an area many Delawareans don't know a lot about.

Prime Hook National Wildlife Refuge in Milton has experienced some real encroachment on their operations. The old parking lot off Fowler Beach Road has been washed away – 20 yards into the Bay. The dunes to the north of the Refuge have been restored, but that’s only a temporary solution. The Corps does an incredible job managing the refuge and re-building the dunes, but this is an example of how saltwater encroachment can impact businesses and ecosystems and agriculture as it has done at this Federal Refuge site.

The beaches and bay are part of Delaware’s history. The Delaware Bay was a lifeline and resource during the early colonial periods. It fueled transportation and a maritime economy that ultimately supported the foundation of our state.

Today, we’re approaching a ‘new normal’ under climate change. Storms, hurricanes, and other weather events are more prevalent – we’re seeing 100 years floods every few years instead of every century.

When I took the oath of office to become Delaware’s 74th Governor, I pledged not only to uphold our Constitution, but to ‘respect the right of future generations to share the rich historic and natural heritage’ of our state. We live in a beautiful state, and we should take care to preserve that heritage.

That includes upholding the goals laid out in our Climate Action Plan and incorporating the Action Plan’s objectives into the resources provided by the federal infrastructure bill.

We can only do this by minimizing emissions. We need to expand clean and renewable energy, put in place energy efficiency measures, transition our transportation sector to zero-emission vehicles and reduce and manage greenhouse gases beyond carbon dioxide.

We also need to prepare for the environmental challenges we’re just now beginning to see. Resiliency efforts like improving real-time data collection of coastal flooding, and providing training, tools and technical assistance on climate change impacts may sound simple but they are critical for us to be prepared.

Thank you for this important discussion today on the SHORRE Act which will protect our coastal communities and beaches from the impacts of climate change.

Senator CARPER. Thank you so much. And thank you. We have mentored each other. And I might say the same thing for our Congresswoman. And thanks for your extraordinary leadership, John, and for being with us today.

We're going to hear from Mayor Lock, we're going to hear from Derek, and then I'm going to take a quick break, take a phone call, get an update on the Ukraine, and come right back. And while I'm doing that, I'm going to ask Lisa to preside for the beginning of the questioning of this panel.

Mayor, 46 years ago, 46 years ago. I understand you and your mom and dad bought a place in Slaughter Beach. And still, you're not just still living there, still have a place there, but you're the mayor, you're the mayor.

Have you ever been the vice mayor at Slaughter Beach? Have you ever been the vice mayor?

STATEMENT OF SLAUGHTER BEACH MAYOR KATHLEEN LOCK

Mayor LOCK. I was.

Senator CARPER. How about secretary? How about treasurer? How about Council person at-large?

All the seats. You've been through all of them. And you retired from the government consulting arena after enjoying a career specializing in large-scale Federal Government procurement and acquisition projects. You are amazing.

And you're a great gift from your parents. And we're glad that they brought you here all those years ago and you stuck around and continue to provide wonderful leadership for not just Slaughter Beach, but for all of our beaches. Thank you.

You're recognized.

Mayor LOCK. Thank you, Senator. And thank you, Chairman Carper and Congresswoman Blunt Rochester and esteemed members of this panel who are testifying with me today. It's an honor to be here.

It was an honor to have been invited, and I can't tell you how happy I am to be representing small coastal towns as we confront the challenges of sea level rise and increasingly violent coastal storms.

On behalf of the entire Delaware Bay communities, I would like to thank you for this opportunity.

Let me tell you about Slaughter Beach quickly, if I might. Slaughter Beach is one of three incorporated towns on the Delaware Bay.

Senator CARPER. First of all, take 30seconds. Tell us why it's called Slaughter Beach.

Everybody asks me that question. And I say call the mayor.

Mayor LOCK. There are so many reasons.

Senator CARPER. All right. We'll make that an addendum to your testimony.

Mayor LOCK. Some stories are much funnier than others.

Senator CARPER. Oh, good, good. Humor is everything.

Mayor LOCK. But the town consists of over 12,000 acres, 98 percent of which are in conservation and owned by the Federal Government Department of Interior as part of Prime Hook National

Wildlife Refuge or the State of Delaware, the Milford Net Conservation Area, or the Delaware Nature Society.

We enjoy living next to an unspoiled and pristine saltwater marsh. And it is one of the last few saltwater marshes left in the United States.

The residents of Slaughter Beach are stewards of over three miles of Delaware Bay shoreline, and we take our stewardship responsibilities very seriously.

We are a horseshoe crab sanctuary and a certified wildlife habitat community.

We maintain 20 access points to the Bay shore and welcome the public to our beaches.

Our beaches are primary breeding ground for horseshoe crabs and are an important stop on the Atlantic flyway for migrating shorebirds, most especially the endangered red knot, a small bird that feeds on horseshoe crab eggs to fuel their annual migration from the furthest tip of South America to their Arctic breeding grounds.

As mayor, I bring the perspective of a frontline community leader who lives with both the pleasures and threats of the sea. I've worked closely with the mayor of Bowers Beach, Ada Puzzo, and the mayor of Lewes, Ted Becker, who is here today.

As we follow the progress of the U.S. Army

Corps of Engineers' beneficial use of dredge material for the Delaware River Feasible Study, we were delighted by its inclusion in the Water Resources Development Act of 2020. And a special thanks goes to you, Senator Carper, and to you, Congresswoman Blunt Rochester, for your leadership and your support in making that happen for the Delaware Bay communities.

I'd like to say that horseshoe crabs play a significant role in human health and wellness. I recently read about the critical role that the blood of horseshoe crabs played in the development of a COVID-19 vaccine. And there are countless other pharmaceutical breakthroughs that have been dependent on the blood of horseshoe crabs.

And due to coastal storms, horseshoe crabs require sandy beaches to lay their eggs and breed. And due to the increasing prevalence of coastal storms, we are losing our sandy beaches and horseshoe crab breeding grounds at an alarming rate.

We had a storm that we experienced on October 29th of this year. I do have some pictures? That I neglected to put up. But it shows the loss of breeding grounds, a habitat breeding grounds, and how every beach on the Delaware Bay was impacted and affected by this one relatively mild storm.

Last year, the Town of Slaughter Beach, and I'm going to briefly touch on this because I believe it shows the importance of partnerships that we need to sustain to manage our coastal and preserve our coastal properties. Last year, the Town of Slaughter Beach invoiced approximately \$90,000 in property taxes. That was it. And of that amount of money, 60,000 went to collect trash and recycling fees, leaving our entire operating budget, with the exception of what we get from grants, at \$30,000 for our operating budget.

I think it displays the need for the partnership that we have been trying desperately to build with Federal, State, county, and local officials.

I'm very pleased, because of that, I'm very pleased with the provisions of the SHORRE Act and would, again, like to thank you, Congresswoman Blunt Rochester and Chairman Carper, for cosponsoring this bipartisan and bicameral bill and for your involvement and concern in Delaware's coastal towns, beaches, dunes, and wetlands. You are national leaders who truly understand the importance of our coastal communities and the vulnerabilities we endure as the global climate warms, weather becomes more erratic, and seas rise at unprecedented rates.

This legislation envisions a better way for the Nation to prepare for future needs to address the problems that will only be exacerbated in the near future.

We, on the coast, rely on our partnerships with county, State, and Federal Government officials to help us protect and sustain our communities. In Delaware, the Department of Natural Resources is an environmental control, is the non-Federal partner on Corps projects. In our experience, however, communication between the Corps, DNREC, and the communities in need of assistance is limited, at best.

One exception to this is when Senator Carper's staff arranged for a Corps 101 meeting for local Delaware communities. That day, 3 years ago, now, was extremely informative. And had it not been for Senator Carper's staff's understanding and collaboration and information sharing that was desperately needed, I doubt Corps staff would have had the vision to coordinate the effort. And I suspect it will not happen again unless someone outside the Corps arranges it. This needs to change.

I implore Corps and DNREC leadership to strengthen communication channels and see the world through the lens of local elected officials. We usually have little or no knowledge of how the Corps function or the regulatory constraints that it must operate under.

And I'd like to note that frontline community leadership changes hands frequently. So annual outreach efforts to educate community leaders is a key component of cooperation and collaboration.

The SHORRE Act is a valuable tool in clarifying the Corps' mission, modernizing the Corps, and streamlining Corps interaction with the communities it serves.

I call out three specific inclusions in the SHORRE Act that I'm particularly happy about. First, the expansion of the Corps' existing river flood mitigation and restoration authority that will now include shoreline protection and restoration for the first time as a primary mission of the Corps.

Second, the identification of Delaware Bay beaches as a priority area for implementation of projects under the amended authority.

Finally, and perhaps the best news, section 15 modifies the Delaware Beneficial Use of Dredge Material Feasibility Study to permit the use of alternative borrow sources. This will significantly reduce the cost to nourish the Delaware Bay beaches.

This section also includes a special rule that allows the Corps to provide emergency services to any of the bay beaches included in the beneficial use study under the existing continuing authority.

These inclusions will result in increased opportunities to work with the Corps that we on the Delaware shore have not enjoyed in the past.

Once again, thank you for providing me with the opportunity to speak on this very critical issue.

[The prepared statement of Mayor Lock follows:]

**Testimony of Mayor Kathleen Lock
Town of Slaughter Beach
Before the Senate Environment and Public Works Committee
Bethany Beach, Delaware Field Hearing
February 23, 2022**

Thank you Chairman Carper, Ranking Member Capito, and esteemed members of this committee. I am honored by your invitation to testify about the vital issues and challenges facing small coastal towns as we confront the dual challenges of sea level rise and violent coastal storms. On behalf of the Delaware Bay communities, I sincerely thank you for this opportunity.

Slaughter Beach is one of three incorporated beach towns on the Delaware Bay shore. As Mayor, I bring the perspective of a front-line community leader who daily lives with both the pleasures and threats of the sea.

While the many visitors who come to our beach and wetlands enjoy fair weather coastal experiences, as property owners and permanent residents we know that we can experience the next damaging storm or elevated tide as soon as tomorrow or next week, and that we can experience these extreme weather events frequently throughout the year. We live with the knowledge that sea level rise is occurring at a much faster pace than what was projected by scientists as little as a year ago. Fortunately, through sound science and good engineering there are many tools available to mitigate or offset damages for many years into the future.

I have recently worked with the mayor of Bowers Beach, Ada Puzzo, and the Mayor of Lewes, Ted Becker, on the Delaware Dredged Material Utilization project. We closely followed the progress of that U.S. Army Corps of Engineers study, and we were delighted by its inclusion in the Water Resources Development Act of 2020. A very special thanks goes to Senator Carper for his support and assistance in making this happen.

We on the coast count on our partnerships with county, state, and federal government officials to help us protect and sustain the thousands upon thousands of wonderful coastal communities throughout our country.

Perspective From a Small Coastal Town

Literally, from my window I watch the tide rise and fall every day, I see the waves on the Delaware Bay daily; some days barely

noticeable and other days so threatening that one would think there will be no land left following the waves breaking angrily on the beach. I see the beautiful productive wetlands protecting our community from flooding caused by those frightening waves and I'm grateful for the work that was done decades ago by the state and USACE to build and maintain those natural storm buffers. But maintenance of our dunes, our jetty and wetlands over the past 30 years has been sporadic and considerably less than what is required. With the exception of Lewes beach, the remainder of the Delaware Bay beach communities are experiencing severely deteriorated beaches and dunes. If these protective landforms are allowed to further deteriorate, we will see homes lost, and critical infrastructure such as water supply, sewer, septic systems, electric supply, and roads damaged, destroyed and service interrupted. We will also see wholesale loss of valued wetlands, upland forested lands, and productive agricultural lands.

Beach and dune work is also needed on Delaware Bay Beaches to protect threatened and endangered species. Our beaches are a primary breeding ground for horseshoe crabs and are an important Atlantic flyway stopover for migrating shorebirds who feed on horseshoe crab eggs, including the endangered red knot. Additionally, horseshoe crabs play a significant role in human health and wellness. I recently read about the critical role the blood of horseshoe crabs played in the development of the Covid-19 vaccine. Horseshoe crabs need sandy beaches to lay their eggs and we are losing sand at an alarming rate. Last fall we experienced a storm that washed away most of the protective dunes and every beach along the Delaware Bay shore was severely impacted.

The breaching of dunes in Prime Hook National Wildlife Refuge, approximately three miles to the south of Slaughter Beach, resulted in devastating damages to the Refuge's wetlands. Acres upon acres of trees were destroyed due to high saltwater tides travelling up stream beds, and many acres of farm fields were made fallow by saltwater intrusion. The U.S. Fish and Wildlife Service invested \$38 million to build back the protective beach and dunes in the Refuge and rehabilitate the wetlands landward of the beach and dunes. It has been estimated that if beach nourishment had been implemented soon after the breach occurred, severe beach erosion in the Refuge and the breakdown of the entire dune system could have been avoided and none of the additional problems would have developed. This should be a hard-earned lesson to all who are responsible for beach preservation. It serves as a perfect example of what not to do because the

estimated cost to conduct early beach repair was on the order \$3-5 million in comparison to the final cost of \$38 million. Sadly we, too often, ignore the science that identifies an emerging problem that could have been curtailed early on. Rather we often wait until the problem blows up then are compelled to respond to it at a far higher cost. Proactive work is almost always far less expensive than reactive work.

Another concern shared by all other coastal towns and communities that I am familiar with is our wholesale reliance on the U.S. Army Corps of Engineers to provide the guidance, the funding, and the engineering expertise to protect our communities. However, it is difficult to bridge the distance between those of us on the front line and the Corps of Engineers staff who are involved in so many issues that are vital to our communities. Primarily coastal flood damage reduction efforts mitigating the onset of sea level rise and the on-going maintenance of navigation channels are the issues that keep us up at night.

In Delaware, the Department of Natural Resources and Environmental Control is the nonfederal partner on Corps' projects, and it is our experience that communication between the Corps and the communities in need of Corps assistance for coastal mitigation or maintenance projects is limited at best. One exception to this, is when Senator Carper's staff arranged for a 'Corps 101' meeting for local communities in Delaware. That day, three years ago now, was extremely informative but had it not been for Senator Carper's staff's foresight that collaboration was desperately needed, I doubt Corps staff would have had the vision to coordinate the effort on their own. I suspect it will not happen again unless someone outside of the Corps arranges it. This needs to change. I implore Corps leadership to see their world through the lens of local elected officials who usually have no knowledge of how the Corps can help, and please keep in mind that front line community leadership changes hands on a very frequent basis. Please make it a priority to reach out to communities across the state to let them know about the good work you do and how you can help them address their water resources related challenges.

The increasing frequency and ferocity of coastal storms is unprecedented, and I do not need to tell this esteemed body that the ravages caused by climate change are occurring now - not in another 30 years as originally predicted. Today's leaders from both large and small communities, are faced with the need to respond to these changing conditions, oftentimes without a

comprehensive roadmap or the appropriate tools needed to mitigate the risk. Certainly, from the perspective of a small community, we must look to our federal and state governments for leadership on this very pressing issue. Individual communities, especially smaller coastal towns, do not have the knowledge-based, expertise or the funds to formulate and implement a comprehensive risk management plan that will protect and sustain our coastal and riverine communities from the effects of changes in weather patterns.

Anecdotally, The Mispillion jetty borders our town. The north wall was constructed by the U.S. Army Corps of Engineers in 1859 and the south wall was completed in 1908. The jetty has served as a breakwater protecting the town from nor'easters for over 160 years, but due to lack of funding, was allowed to fall into disrepair in this century. A 2010 engineering study of the Mispillion watershed performed by PBS&J, determined that due to the deterioration of the south jetty wall, detritus flowing from the Mispillion river channel to the Delaware bay lands on the northernmost shore of Slaughter Beach, and is the direct cause of a buildup of peat that is over 3.5 feet deep, covering over 5 acres of prime shorefront. This accumulation impairs sensitive beach habitat and restricts the safe recreational use of the area.

A Vision of Next Steps to Attain Resilience

From my vantage point I, along with my town council and community citizens, have a clear understanding of the natural hazard threats knocking on my community's door. These include the loss of beaches, dunes, and wetlands. I will share my thoughts on ways to improve our resilience and sense of community security.

- I hope for a more end-recipient friendly Corps, and an evolved Corps that anticipates the need for communication and education on their opportunities to help us.
- I hope to see all stake holders tasked with building more resilient coastal communities utilize a vision of the whole system. The interdependence of sea, beach, dunes, and wetlands, and the value they add to our quality of life and tourism-based economy, must be seen as whole system that is in dynamic balance. When seen as the system it is, then its management and stewardship must involve a systems-based resilience plan.

- I hope to see a Corps that is far less hidebound - one that has the authority to immediately respond to and assist communities damaged by coastal storms; a Corps that can be proactive in repairing the wetland and dune systems that are critical to sustaining our beautiful coastal areas; a Corps that can abate future damages when those damages are in their infancy and not after they have grown to unmanageable proportions.
- The Corps has proposed using sand dredged out of navigation channels for beach restoration to aid in reducing coastal flooding. Since the Corps is tasked to remove excess sediment in navigation channels, and is also tasked to replace sediment lost to erosion in valued coastal landforms, and yet again, is tasked to address the availability and capacity of Confined Disposal Facilities, it should be obvious that efficiencies can be found by addressing all three as parts as a single mission - not as three separate missions. It is the best way forward. However, I was amazed to learn not long ago that despite the overwhelming value of placing sand dredged from the Delaware River Main Channel on sand starved beaches along the adjacent shoreline, the Corps instead obtained permits to expand the under-water disposal site on the bottom of the Delaware Bay so dredged sand can be disposed of cheaper instead of more effectively. It appears to me that the Corps personnel responsible for dredging the channel are still significantly cordoned off from the Corps staff responsible for reducing the threat of coastal flooding. While the Corps talks about using dredged material to address a sediment loss problem it is still mostly talk.

I mentioned above the significant investment made by the U.S. Fish and Wildlife Service at Prime Hook National Wildlife Refuge. The rebuilt wetland area within the Refuge depends on Delaware Bay waters entering the marshes through the Mispillion Inlet at the north end of Slaughter Beach. This is a jettied inlet through which the Mispillion River and Cedar Creek enter the bay. Tidal water from the Delaware Bay that flows southward through Cedar Creek is the source water for the entire Prime Hook Refuge wetland system. We have watched the slow and steady disintegration of the inlet jetties. We have asked for and hoped for dredging to open the boat channels back to their design depths and configuration. We have watched, for decades now, as the Mispillion river continues to erode the riverbank north of the inlet as it pressures the shore toward a breakthrough entrance into the bay north of the inlet that was

designed to carry its water out. We have watched this happen before and we have seen the shoaling that quickly shuts off the jettied inlet. Imagine the cost to the environment and critical habitat if the water flow through the Mispillion Inlet, the water source for the USFWS \$38 million Refuge project, is severely reduced. Without that volume of water flowing south to the Refuge we can imagine it turning back into a giant phragmites fire hazard.

Benefits of The SHORRE Act

I am pleased with what I have seen in the SHORRE Act and want to specifically thank Chairman Carper for his decades of involvement in and concern for Delaware's coastal towns, beaches, dunes, and wetlands. His leadership spans decades of work from when he was our Representative in Congress, through being our Governor and now serving as our Senior Senator. As Chair of the U.S. Senate Committee on Environment and Public Works he is a national leader who truly understands the importance of our coastal communities and the vulnerability they endure as global climate warms, weather becomes more erratic, and seas rise at unprecedented rates. While greenhouse gas emissions are the subject for another day, today we focus on the effects of sea level rising more quickly and weather turning more severe. I thank all who have brought forward this legislation which envisions a better way for the nation to prepare for future needs to sustain our valued coastal lands.

The SHORRE Act is a valuable tool in modernizing the Corps and the way the Corps interacts with communities it is serving. I call out three specific inclusions that I am particularly happy about. First, the expansion of the Corps' existing river flood mitigation and restoration authority that now will include shoreline protection and restoration as a primary mission of the Corps. Second the identification of Delaware Bay Beaches as a priority area for implementation of projects under the amended authority. Finally, and perhaps the best news, Section 15 modifies the Delaware Dredged Material Utilization project to permit the use of alternative borrow sources to the Delaware River. This is expected to significantly reduce the costs to nourish the Delaware Bay beaches. This section also includes a special rule for the DMU project that allows the Corps, while alternative borrow sources are being identified, to carry out the nourishment of any of the Bay Beaches included in this project under an existing continuing authority for beneficial use of dredged material. These inclusions will result in increased opportunities to work with the Corps that we on the Delaware Bay shore have not enjoyed in the past.

Once again, thank you for providing me with the opportunity to speak on this very critical issue.

Senator CARPER. Mayor, thanks for your leadership in Slaughter Beach and thank you for extending that leadership well beyond Slaughter Beach and joining us today. Thanks so much.

Next, Derek, Derek Brockbank.

Mr. Brockbank is the executive director of the Coastal States Organization, which represents our nation's coastal states, territories, and commonwealth. Prior to that, he served as the executive director for the American Shore and Beach Preservation Association and as campaign director for a collision effort to restore the Mississippi River delta and coastal Louisiana.

Mr. Brockbank, you're recognized for your statements. We're delighted that you have joined us. Thank you so much for coming.

**STATEMENT OF DEREK BROCKBANK, EXECUTIVE DIRECTOR,
COASTAL STATES ORGANIZATION**

Mr. BROCKBANK. Thank you. Thank you, Chairman Carper, Representative Blunt Rochester.

Thank you for the opportunity to testify today on behalf of Coastal States Organization.

I am honored to be on a panel of what I consider absolute coastal champions at multiple levels of government.

Since 1970, CSO has served as the collective voice for the Nation's coastal states and territories on Federal policy issues. CSO members are Governor-appointed delegates who run or oversee State coastal zone management programs.

Our State members work closely with the U.S. Army Corps of Engineers to plan, permit, and implement projects in the coastal zone, serving variously as partner, client, and occasionally State watchdog of the Corps. And on behalf of our members, CSO has worked and continues to work with the Corps to develop and advance policies to better manage resources in the coastal zone.

The topic of today's coastal hearing is of utmost importance to every coastal manager in the country. Coastal managers are facing unprecedented challenges, both caused and exacerbated by climate change. But perhaps the most acute climate change impacts along the coast are in shoreline management and restoration.

Along saltwater coasts, what we've heard a lot about today, rising seas and increasing storm intensity are expanding flood zones and will increasingly inundate low-lying coastal areas.

But along freshwater great lakes coasts, lake levels are also fluctuating at unprecedented rates. This has led to increased pressure to restore our hardened shorelines on both saltwater and freshwater coasts.

Although many communities are now beginning to look at what we call managed retreat, the ability to move infrastructure away from the water's edge, but the reality is that both are needed. We cannot just restore or retreat. We need to restore and retreat. Determining when and how to restore and when and where to retreat is at the heart of coastal resilience.

Fortunately, coastal communities and Congress have made significant strides to address coastal resilience. In particular, the Infrastructure and Investment and Jobs Act, together with funding and other recent supplemental appropriations has provided states,

the Corps, and other Federal agencies an incredible opportunity to restore and improve the resilience of the nation's shorelines.

In the past few years Congress has enacted strong policies for the Corps on coastal resilience and we've seen great improvement in the Corps' consideration of climate impacts.

However, the Corps' willingness or ability to use natural infrastructure and focus on shoreline restoration across the country has not reached the level of importance it should given the magnitude of challenges from climate change.

Therefore, CSO is very pleased to support the SHORRE Act, which significantly improves the Corps' ability to address coastal restoration and resilience by elevating shoreline and riverbank protection and restoration to a primary mission of the Corps.

In many coastal regions, restoring a shoreline can serve many purposes in the community.

Integrated beach, dune, and back bay wetland systems that use natural and nature-based features can help a community adapt to increasing flood risk, improve ecological value, and can provide economic stability.

This balanced approach to shoreline restoration and management might not fit neatly into any of the Corps' current mission areas but is essential to a functioning and resilient coast in an era of climate change.

CSO believes making shoreline restoration a primary mission of the Corps will help develop these multi-use projects.

Additionally, the SHORRE Act gives local project sponsors increased flexibility to account for climate change in the design and construction of coastal projects and changes project funding structures to support coastal communities, with special consideration of economically disadvantaged communities.

And while CSO strongly supports the SHORRE Act, we would encourage the committee to go to do even more to get the Corps to prepare coastal communities for climate effects, climate impacts, including planning on longer time horizons and reforming the Corps' benefit cost ratio process.

The Corps should recognize that although there are projects, there are coastal projects that are often built for 50-year authorizations, local sponsors' expectations are that these projects last significantly longer than 50 years. However, given a rapidly changing climate, coastal projects are facing vastly different considerations than when they were when they were originally authorized.

The Corps should plan and develop transition pathways for existing projects that are reaching their expiration and develop coastal adaptation projects for 50 to 200-year projections for sea level rise and, if possible, lake level change.

Finally, the current BCR analysis is keeping the Corps stuck in 20th century thinking.

Thrilled to hear some of the progress that's being made, the testimony from Colonel Kelly about how that BCR is changing, but the reality of the coast is that it's multi-use.

Resilient coastlines have ecological benefits, social cohesion benefits, public health benefits, even benefits of racial justice. The Corps should be developing and using a process to better quantify and incorporate the value of those benefits. And we know they are

beginning to develop that process. But the sooner that can become used across the Corps, the better off our coastlines will be.

Furthermore, the Corps' current BCR puts the Corps in a position of investing in areas of existing wealth. Congress has begun to direct the Corps to consider how to build resilient coastal infrastructure for economically disadvantaged communities, but this should go beyond pilot projects and reduce cost share for historically marginalized communities that have borne the brunt of poor coastal planning and decisionmaking.

The Corps needs to plan projects for a resilient and equitable future, not simply rebuild the coastlines of the past in ways that withstand climate impacts.

However, reevaluating the Corps BCR must start with a long overdue implementation of the PRNG, as we heard from the previous panel. And until we see what the Corps is recommending to themselves for greater inclusion of benefits through the PRNG, it's hard to make specific recommendations for how Congress can direct the Corps.

I appreciate this opportunity to testify on behalf of CSO before the committee on this critically important topic.

Just to reiterate, Congress can make an important step by passing the SHORRE Act as part of (inaudible) 2022. We would also encourage Congress to consider other studies and policies that would help direct the Corps to improve the nation's coastal resilience to provide oversight and guidance to the Corps and improving the BCR and ensuring that project decisions are based on forward-thinking values that consider our future climate and principles of equity and justice.

We look forward to working with the committee, all of Congress, and the Army Corps on these and other important coastal issues.

[The prepared statement of Mr. Brockbank follows:]



Testimony of Derek Brockbank
Executive Director, Coastal States Organization

February 23, 2022

Before the Senate Committee on Environment and Public Works

The Coastal States Organization (CSO) appreciates the opportunity to provide testimony to the Senate Environment and Public Works Committee on shoreline restoration in the face of climate change. Since 1970, CSO has served as the collective voice for the nation's coastal states, commonwealths, and territories on federal legislative, administrative, and policy issues relating to coastal, Great Lakes, and ocean management. CSO's members, governor-appointed delegates representing thirty-six state and territory coastal management programs, partner with coastal communities, federal agencies, tribal governments, and industry for the safe and effective management, beneficial use, protection, and development of the coastal zone through the federal-state partnership established under the Coastal Zone Management Act (CZMA).¹

CSO members work closely with the U.S. Army Corps of Engineers (USACE) districts to plan, permit, and implement projects in the coastal zone across the three primary USACE mission areas, navigation dredging, flood risk reduction, and aquatic ecosystem restoration, all of which can play a role in shoreline restoration. Under the CZMA federal consistency provisions, state coastal programs may review federal actions in the coastal zone for consistency with the state's coastal zone management program, necessitating a close working relationship with USACE. CSO members are also often local cost-share sponsors for USACE project work, so act as clients of USACE as well.

On behalf of our members, CSO has worked with USACE to develop and advance policies to better manage resources in the coastal zone. This partnership has included participation and support for regional planning work, including regional coastal studies as well as the National Shoreline Management Study. CSO is also working in collaboration with the Institute for Water Resources at USACE to do an analysis of state and federal regulations on sediment placement which impact the beneficial use of dredged material. CSO also actively participates in USACE initiatives on natural infrastructure, such as Engineering With Nature and SAGE.

Climate change is the defining coastal issue of our time.

Coastal communities face many unprecedented challenges irrespective of the carbon dioxide levels in our atmosphere, from population growth to sediment management and increasing erosion to invasive species to increasing number of commercial uses on the coast. Each of these are likely to be exacerbated by the combined coastal impacts of climate change, including sea level rise, increasing intensity of storm and rain events, ocean acidification and increased temperatures. Almost every facet of coastal

¹ 16 U.S.C. § 1451 *et seq.*

management will be impacted by climate change impacts, making climate change the defining coastal issue of our time.

Perhaps the most acute way climate change impacts the coast is in shoreline management and restoration. Along saltwater coasts, rising seas and increasing storm intensity are expanding flood zones, and will increasingly inundate low-lying coastal areas, pushing shorelines inland. Along our freshwater Great Lakes coast, lake levels are fluctuating at unprecedented rates. Recent record high lake levels have pushed Great Lakes shorelines inland. Both freshwater and saltwater coasts have therefore seen increased pressure to restore and/or harden shorelines to keep them in current locations despite rising sea and fluctuating lake levels. Coastal communities are also beginning to look at “managed retreat” or some variation of allowing nature to take its course by moving threatened infrastructure out of harm’s way rather than adding protection. The reality is that both are needed – we cannot just restore *or* retreat; we need to restore *and* retreat. *Determining when and how to restore and when and where to retreat is at the heart of coastal resilience.*

Fortunately, coastal communities and Congress have both made significant strides to address coastal resilience. Many examples of how state coastal zone management programs are using coastal management and planning to improve coastal resilience can be found in the CSO publication “*Coastal Management and Resilience Planning*”² (which we are including for the record), as well as the factsheets developed by CSO for each of the state coastal management programs.³

CSO, together with American Shore & Beach Preservation Association (ASBPA), has developed a series of joint policy recommendations on beach and inlet management in the face of climate change⁴ (also included for the record). These policies address issues of sediment management, permitting, funding, infrastructure development, and research needs to manage and maintain our nation’s shorelines. CSO has been pleased to see Congress enact some of these policies in recent Water Resources Development Acts (WRDAs). We believe some of the policies enacted in 2016, 2018, and 2020 on the beneficial use of dredged material (BUDM) and in support of natural infrastructure, could be transformative in how USACE manages and plans coastal projects. We have yet to see USACE fully implement some of these policies – particularly those included in WRDA 2020 – so have refrained from making additional policy recommendations to Congress on issues like BUDM until we see USACE fully implement what is already written into law.

Additionally, the funding in the Infrastructure Investment and Jobs Act (IIJA), together with funding in other recent supplemental appropriations, has provided USACE an unprecedented opportunity to restore and improve the resilience of the nation’s shorelines. If USACE can strategically coordinate with other federal agencies that received funding in the IIJA and have a coastal mission area, primarily NOAA, and with state coastal management programs, they could begin to restore the nation’s coastlines in ways that fundamentally adapt them to rising seas and changing lake levels and become more resilient to future conditions. But this will mean full consideration of current and impending climate impacts in every part of project implementation from regional planning through to construction.

² [CZM-and-Resilience-Planning-Fact-Sheet.pdf \(coastalstates.org\)](https://www.coastalstates.org/csopublications/#StateFactSheets)

³ <https://www.coastalstates.org/csopublications/#StateFactSheets>

⁴ [Joint Beach and Inlet Management Policy - Coastal States](#)

Congress has enacted strong policies for USACE to follow on coastal restoration and has provided robust funding, and we have seen improvement in USACE's consideration of climate impacts. However, willingness to use natural infrastructure and a broader perspective on resilience and coastal restoration has still not reached the level of importance that it should for USACE given the magnitude of the challenges from climate change.

Elevating the coastal focus of USACE and supporting local project sponsors through the SHORRE Act.

CSO is pleased to support Shoreline Health Oversight, Restoration, Resilience, and Enhancement (SHORRE) Act. The SHORRE Act significantly improves the USACE capabilities to address coastal enhancement, restoration, and resilience by elevating shoreline and riverbank protection and restoration to a primary mission in carrying out water resource development projects, providing increased flexibility to local project sponsors, and investing in priority regional needs.

Making shoreline restoration a core mission area of USACE

The elevation of protection and restoration of shorelines and riverbanks from erosion and other forces exacerbated by climate change as a primary mission of the USACE will enable both USACE and local partners to better address these emerging coastal hazards and build coastal community resilience. This legislation would enable USACE to implement projects with a primary purpose of shoreline restoration or protection, rather than being a secondary or tertiary purpose for civil works projects. This is particularly important for the many locations where a restored shoreline serves many purposes to the community. Integrated beach, dune and back-bay wetlands systems that use natural and nature-based features can help a community adapt to increasing flood risk (from inundation, storm surge, and greater rain intensity), improve ecological value, and can provide economic stability through recreation and tourism as well as maintaining property tax value. This balanced approach to shoreline restoration and management, might not fit neatly into any of the Corps' current mission areas, but is essential to a functioning and resilient coast in an era of climate change.

The SHORRE Act seeks to ensure USACE is building projects for future climate conditions not past conditions by ensuring that projects and measures for the protection and restoration of shorelines are formulated to increase their resilience to the impacts of climate change as well as other factors contributing to the vulnerability of coastal communities and ecosystems. But more could be done. USACE should work with local communities to identify where vulnerable coastal infrastructure – once damaged – should be rebuilt with added resilience elements, redesigned in a new more resilient method, or relocated (or some combination thereof). This can be accomplished by specifically authorizing the addition of resilience elements to flood control projects that are being re-built using Flood Control and Coastal Emergency (FCCE) funds.

Giving local sponsors increased flexibility

Section 9 of the SHORRE Act provides increased authorizations for USACE in conducting shoreline protection and restoration studies to expand the value of these studies in assisting coastal communities with addressing coastal hazards and community resilience. Specifically, the SHORRE Act authorizes

Coastal States Organization Testimony, Environment and Public Works, Field Hearing, “*Examining Shoreline and Riverbank Restoration in the face of Climate Change*”, Bethany Beach, DE, Feb. 23, 2022

USACE to assess options to reduce flood risk from individual or compound effects of coastal storms and inundation, waves, and erosion; sea level rise; tides; seasonal variations in water levels; rainfall events; and numerous other drivers of flood risk as part of flood or coastal storm risk management feasibility studies at the request of the local partner.

This authorization is important, but feasibility studies ought to come from – and potentially be prioritized by – broader regional resilience studies, such as the North Atlantic Coastal Comprehensive Study (NACCS) and the South Atlantic Coast Study (SACS). CSO is pleased that USACE has undertaken numerous local and regional resilience studies including the Texas Coastal Study, the New York & New Jersey Harbor and Tributaries Study, and the Miami-Dade Back Bay Study, and is poised to initiate the Great Lakes Resilience Study in FY22. These and future studies must consider the multiple challenges of climate change and maximize multiple benefits through use of natural infrastructure and consideration of infrastructure removal.

The SHORRE Act also improves coastal communities' ability to address emerging coastal hazards by authorizing several provisions which give local project sponsors increased flexibility in construction projects for shoreline protection and restoration:

- Section 10 authorizes USACE to apply any amounts due to local partners in reimbursement as credits to the local partner share for another eligible project, reducing or eliminating the local partner share for that project.
- Section 12 authorizes USACE to provide the federal share for acquiring land, easements, and rights-of-way for projects in advance of the project rather than as a reimbursement. This removes a significant hurdle for the local partner to provide the funding for these acquisitions up front.
- Section 14 authorizes the USACE to accept the provision of fish and wildlife mitigation measures as the local partner contribution for a project.

Changing funding structures to support coastal communities, with special consideration of economically disadvantaged communities

The SHORRE Act increases the accessibility of shoreline protection and restoration projects for coastal communities by 1) decreasing the local contribution for shoreline and riverine protection and restoration studies to 20%, or 10% for economically disadvantaged communities (Section 3), 2) decreasing the local contribution for structural flood control or hurricane and storm damage reduction to 10% for economically disadvantaged communities (Section 3), and 3) decreasing the local contribution for nonstructural, natural, and nature-based features to 20%, or 10% for economically disadvantaged communities (Section 13).

Considerations for Great Lakes states

The SHORRE Act provides authorizations for regional priorities with two critical authorizations for the Great Lakes States (section 17 and 18). Specifically, the SHORRE Act will significantly enhance the capacity of Great Lakes States to address coastal inundation and erosion caused by lake level rise by authorizing USACE to develop and maintain lake level forecasting models and authorizing advanced

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assistance to local communities to address risks of damage from rising water levels at full Federal expense.

The need for longer term assessments

While the SHORRE Act addresses the uncertainty of specific beach projects that have or will imminently reach the end of their 50-year authorization, expiring USACE projects should not rely on a special legislation for moving forward. The USACE needs to recognize that although many of their projects are built for 50-year authorization, the local sponsors' expectation is for these projects to last significantly longer than 50 years. Given the rapidly changing coastal conditions due to climate change, coastal projects are facing a vastly different considerations than when they were authorized.

USACE should be authorized and funded to plan and develop transition pathways for existing coastal projects that are reaching their expiration, and to develop coastal adaptation projects for long-term (50-200 year) sea level rise and lake level change projections. This should be done by USACE, in coordination with states and other federal agencies, by assessing the sustainability of all USACE coastal flood risk, navigation, and ecological restoration projects, *and* developing post-authorization plan. USACE should also use long term inundation projections and a nationwide inventory of sediment needs and availability (based in part on the SAND assessment in the SACS⁵, and the offshore sand inventory developed by BOEM⁶) to prioritize existing and proposed projects based on long term economic viability.

Comprehensively re-thinking BCR.

Finally, the current Benefit Cost Ratio (BCR) analysis that dictates what USACE projects get funded is keeping USACE stuck in 20th century thinking. The BCR has led USACE to build coastal projects that maximize one or just a few benefits – flood risk management, coastal storm risk reduction – all of which have easily quantifiable monetary values while ignoring or under-valuing others that are harder to quantify. The reality of the coast is it is multi-use. A single project can have economic and social impacts far beyond its primary purpose. Resilient coastlines have ecological benefits, social cohesion benefits, public health benefits, even benefits of racial justice (in how access and use are considered) – benefits that are harder to quantify. USACE should be developing and using a process to better quantify and incorporate the value of these benefits

Furthermore, the current BCR also puts USACE in a position of investing in areas of existing wealth. Congress has begun to direct USACE to consider how to build resilient coastal infrastructure for “economically disadvantaged” communities. But this should go beyond pilot projects and reduced cost-share for communities that have been historically marginalized and borne the brunt of poor coastal planning and decision-making (often by USACE). USACE needs to plan projects for a resilient *and equitable* future, not simply rebuild the coastlines of the past in ways that withstand climate impacts.

PR&G

⁵ https://www.sad.usace.army.mil/Portals/60/siteimages/SACS/508%20SAND_FINAL_Report_15Sep_CC.pdf

⁶ <https://www.boem.gov/building-national-offshore-sand-inventory>

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Re-evaluating the USACE's BCR must start with long overdue implementation of the Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies (PR&G)⁷. We are pleased to hear that USACE is actively working to develop implementation guidance for the PR&G. While we had hoped to see the guidance by now, we are heartened to hear that it will be out this calendar year. Until we see what USACE is recommending to themselves for greater inclusion of benefits, we find it hard to make more specific recommendations for BCR reform.

Conclusion

I greatly appreciate the opportunity to testify on behalf of CSO before the Environment and Public Works Committee on the critically important topic of shoreline and riverbank restoration in the face of climate change. We are pleased to see the progress made by coastal communities, Congress, USACE, and other federal agencies, and are thrilled with the opportunity to increase the nation's coastal resilience presented by the IJA. However, we still have a long way to go.

Congress can make an important step by passing the SHORRE Act as part of WRDA 2022. We also encourage Congress to consider other studies and policies that would direct the Corps to improve the nation's coastal resilience through planning and project development. Finally, we ask Congress to provide oversight and guidance to the Corps in improving their BCR process to make project decisions based on forward thinking values that consider our future climate and principles of equity and justice.

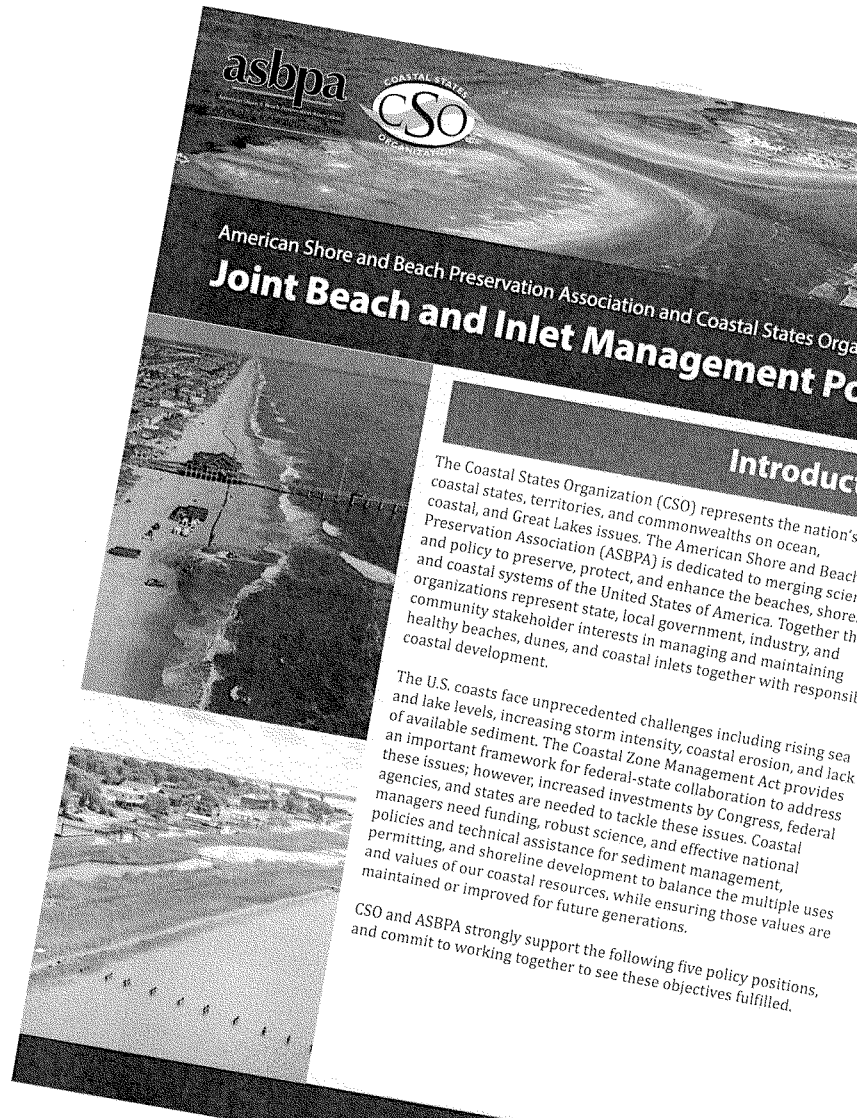
We look forward working with the Committee and USACE on these and other important coastal issues.

Sincerely,



Derek Brockbank
Executive Director

⁷ <https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/PandG>



asbpa **CSO**

American Shore and Beach Preservation Association and Coastal States Organization

Joint Beach and Inlet Management Policy

Introduction

The Coastal States Organization (CSO) represents the nation's coastal states, territories, and commonwealths on ocean, coastal, and Great Lakes issues. The American Shore and Beach Preservation Association (ASBPA) is dedicated to merging science and policy to preserve, protect, and enhance the beaches, shore, and coastal systems of the United States of America. Together, these organizations represent state, local government, industry, and community stakeholder interests in managing and maintaining healthy beaches, dunes, and coastal inlets together with responsible coastal development.

The U.S. coasts face unprecedented challenges including rising sea and lake levels, increasing storm intensity, coastal erosion, and lack of available sediment. The Coastal Zone Management Act provides an important framework for federal-state collaboration to address these issues; however, increased investments by Congress, federal agencies, and states are needed to tackle these issues. Coastal managers need funding, robust science, and effective national policies and technical assistance for sediment management, permitting, and shoreline development to balance the multiple uses and values of our coastal resources, while ensuring those values are maintained or improved for future generations.

CSO and ASBPA strongly support the following five policy positions, and commit to working together to see these objectives fulfilled.

Policy 1: Sediment Management

Beaches and inlets are dynamic features that change based upon the flow of sediment through coastal systems. Properly valuing and managing sediment supports balanced coastal uses, which is essential to the ecosystem health, economic vitality, and resilience of coastal states and communities.

Ensure that uncontaminated dredged sediment is beneficially used, through:

1. Implementation of a national policy on Regional Sediment Management (RSM) and the Beneficial Use of Dredged Material (BUDM) that:
 - a. Defines uncontaminated sediment as a resource to support public benefits, which include ecosystem restoration, coastal hazard and storm damage reduction, community, and other benefits;
 - b. Prioritizes and funds the beneficial use of uncontaminated dredged material from federal dredging projects, except in cases where a suitable placement site cannot be identified;
 - c. Establishes a new national understanding of the federal standard where, as part of U.S. Army Corps of Engineers (USACE) determinations of the "least cost alternative" for the disposal of dredged materials, the USACE includes the economic evaluation (including long-term costs and costs avoided) of coastal sediment for public benefits;
 - d. Maintains a nationwide inventory of coastal sediment availability including offshore, nearshore and potential upstream sources, to plan for future use and maximize availability for public benefits; and
 - e. Assesses and mitigates adverse impacts to the littoral system caused by navigation, coastal development, construction, or other similar projects;
2. Regional (multi-state) resilience studies and/or plans that identify sediment needs and availabilities to enable optimal use of sediment resources;
3. State and/or USACE district sediment management plans that coordinate optimal use of dredged sediment and enhance economies of scale, including:
 - a. Publicly available inventories of implemented and anticipated sediment dredging and placement projects within a USACE district; and
 - b. Five-year sediment budgets USACE district;
4. Federal funding and technical assistance for state coastal management programs and local government partners to plan, prioritize, and implement beneficial use projects, by:
 - a. Identifying opportunities to leverage cross agency funding sources and promote cost saving benefits (ex: FEMA);
 - b. Supporting operations, maintenance, and monitoring of projects; and
 - c. Establishing a federal cost-share for RSM planning (maintain existing programs and develop new strategies);
5. Technical, environmental, and financial support for RSM activities within the USACE in partnership with coastal states; and
6. BUDM projects that have robust stakeholder engagement, which includes state, local impacted communities, industry, NGOs, and other relevant parties.

Policy 2: Permitting

Beach and inlet management and restoration rely on strong environmental protections to maintain the health and ecological value of these systems. Optimizing the timeliness, efficiency, and effectiveness of regulatory review for projects occurring along beaches and inlets is critical to ensuring the functioning and restoration of multi-use coastlines.

Promote timely and efficient permitting of beach and inlet management projects, while upholding all environmental standards, by:

1. Funding federal permitting agencies at a level commensurate with the permitting demand to enable efficient, coordinated permit approval and enforcement process;
2. Providing dedicated and predictable funding to applicable federal and state regulatory agencies to advance upfront coordination and meet project deadlines;
3. Having states serve as a centralized coordinator for state and federal permitting to create efficiencies through voluntary and innovative state-led permitting approaches, such as:
 - a. State-led programmatic, integrated Biological Opinions to meet Endangered Species Act requirements for coastal threatened and endangered species in coordination with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service;
 - b. State-led programmatic, integrated Essential Fisheries Habitat (EFH) assessments to meet Magnuson Fishery Conservation Act requirements in coordination with NMFS; and/or
 - c. State-led Regional General Permits or other agency-to-agency agreements with the USACE for beach and inlet management projects within state waters that allow state programs to lead coordinated federal/state permit reviews;
4. Requiring that various permitting reviews needed for state and federal approval are conducted concurrently to the maximum extent practicable; and
5. Ensuring state and federal permitting regulations are based on best available science.



Policy 3: Funding

As beaches and inlets face greater physical changes in the coming century than in all of human history, coastal states and communities need dedicated and predictable funding for projects and effective management, guided by data-driven prioritization that considers future coastal conditions.

Establish dedicated and predictable funding for coastal flood risk, storm damage reduction, coastal erosion control, and long-term inundation preparedness projects, by:

1. Requiring the USACE, in coordination with each coastal state, to develop and update a 10-year schedule of priorities for federally authorized beach and inlet projects;
2. Investing in state and federal coordinated planning for projects to support timely and efficient permitting and implementation;
3. Supporting collaborative (federal, state, and local) planning, construction, and management of projects through systems-based and/or watershed-based approaches;
4. Developing a better cost-share standard that reduces barriers for economically challenged and/or otherwise disadvantaged communities;
5. Authorizing USACE to implement coastal erosion control projects based on developed methodologies, standards, best practices, and economic analyses;
6. Publicly listing all federally authorized coastal projects with their study, construction, and funding status; and
7. Authorizing and funding USACE to plan and develop coastal adaptation projects for long-term (50-200 year) sea level rise and lake level change projections, by:
 - a. In coordination with states and other federal agencies, USACE assessing sustainability of all USACE coastal flood risk, navigation, and ecological restoration projects, and developing post-authorization plans;
 - b. Using long term inundation projections and the nationwide inventory of sediment needs and availability (see Policy 1: Sediment Management (1)(d)) to prioritize existing and proposed projects based on long term economic viability; and
 - c. Working with local communities to identify where vulnerable coastal infrastructure – once damaged – should be rebuilt with added resilience elements, redesigned in a new more resilient method, or relocated (or some combination thereof).

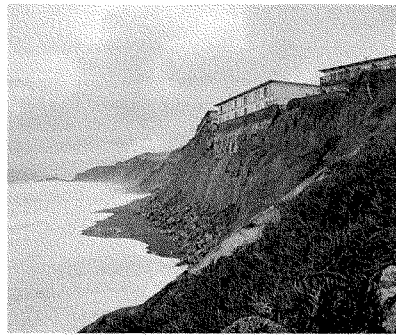


Policy 4: Development

Development along the coastlines needs to change. Coastal property and infrastructure are threatened by sea level rise, lake level change, and increasing coastal storm intensity, which also exacerbate on-going challenges of coastal erosion and inundation. Coastal states and communities need policies and procedures to ensure beaches and inlets can migrate and adapt to changing coastlines to support the range of uses in the coastal zone.

Encourage responsible beachfront building setbacks, redevelopment standards, and construction practices, including relocation programs to enable inland migration of beach and inlet habitats, by:

1. Providing funding through the Federal Emergency Management Agency (FEMA) for relocation or removal of structures that are under imminent threat of collapse due to shoreline erosion and/or regular tidal scouring, including by:
 - a. Authorizing NFIP claims for structures under imminent threat; and
 - b. Establishing a FEMA program to pay for relocation or removal of structures under imminent threat of loss due to coastal erosion;
2. Requiring FEMA to better align Community Rating System credits with successful beach management practices and outcomes;
3. Requiring FEMA to consider beach and inlet management needs in all state, county, and local hazard mitigation planning and disaster mitigation funding programs, including through:
 - a. Prioritizing natural infrastructure solutions for coastal resilience in the Building Resilient Infrastructure and Communities program;
4. Continuing support for federal and state coastal management programs to formulate, adopt, and implement appropriate shoreline and beachfront setbacks, design, construction, and redevelopment standards;
5. Requiring all federally-funded programs and federal grant funding for coastal adaptation and relocation programs (including through the Department of Transportation, the Department of Housing and Urban Development, etc.) to allow for beach migration, recognizing public trust lands, resources, and uses (including public access rights); and
6. Coordinating federal agency actions that regulate, manage, or promote coastal infrastructure through the Council on Environmental Quality or other entity to ensure that public trust rights to the coast are considered.



Policy 5: Research

Beach and inlet management must be based on the best available science. Ensuring high quality coastal data acquisition, research, modeling, and mapping that is usable by coastal managers is essential for coastal states and communities to make timely and risk-informed decisions.

Support and improve coastal data acquisition, research, modeling, and mapping capabilities to better prepare coastal communities to manage their beaches and inlets for future conditions, by:

1. Funding on-going data collection and long-term monitoring of physical coastal conditions including: land, lake and sea level elevations; nearshore bathymetry; offshore sand sources (see 1.a.iv. above); wave, tidal and current metrics, etc.;
2. Using robust data on physical coastal conditions to improve accuracy of localized lake and sea level elevation modeling, coastal flooding and storm surge modeling, and other modeling needs, to inform beach and inlet management decision making;
3. Coordinating and implementing efficiencies across federal, state, and local beach mapping programs, by:
 - a. Ensuring the inclusion of beach and inlet data sets and layers in existing national- and regional-level data portals;
 - b. Identifying efficiencies within existing programs for coastal and shoreline mapping and monitoring at the federal, state, and local levels; and
 - c. Funding and providing technical support for states and local communities to develop high resolution modeling based on fine scale data sets and flood scenario visualization tools; and
4. Funding federal, state, and local coastal research programs and competitive research grants that support beach and inlet management.



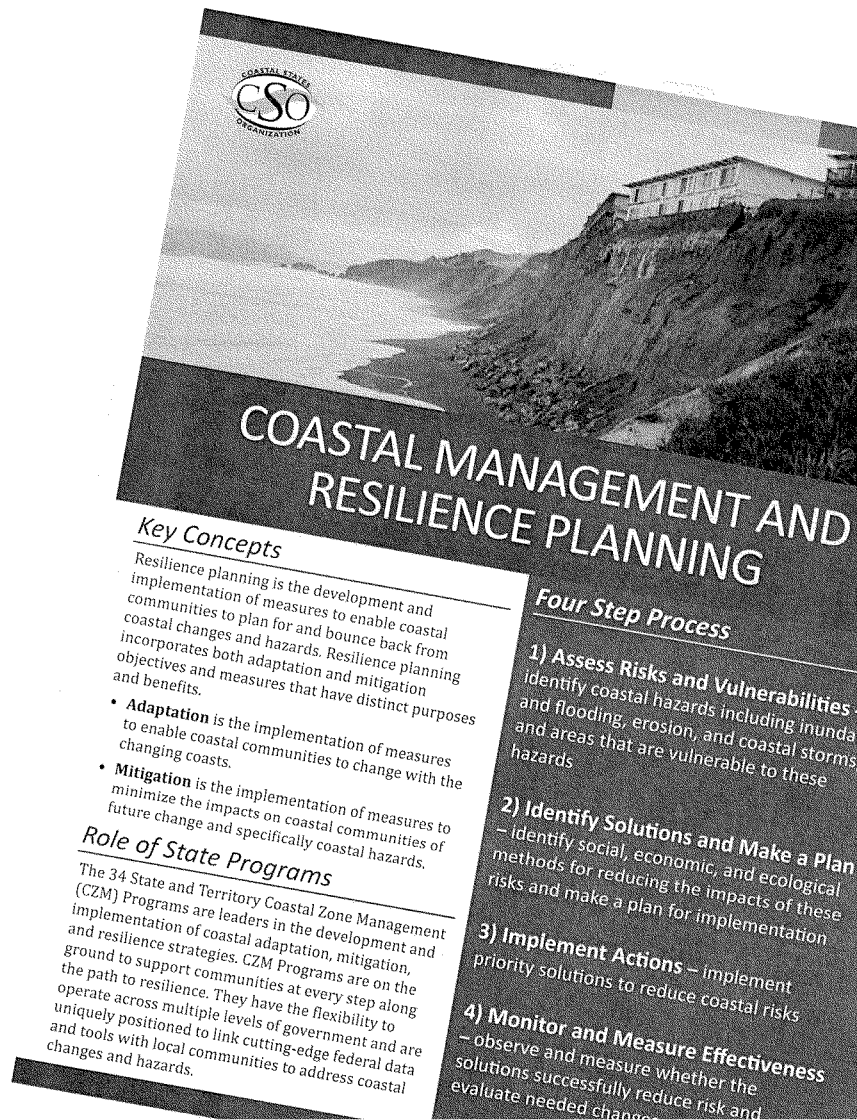
American Shore and Beach Preservation Association and Coastal States Organization Joint Beach and Inlet Management Policy



American Shore and Beach
Preservation Association
5A Market
Beaufort, SC 29906
(843) 379-1005
www.asbpa.org



Coastal States Organization
50 F Street NW, Suite 570
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COASTAL STATE AND TERRITORY ORGANIZATION

COASTAL MANAGEMENT AND RESILIENCE PLANNING

Key Concepts

Resilience planning is the development and implementation of measures to enable coastal communities to plan for and bounce back from coastal changes and hazards. Resilience planning incorporates both adaptation and mitigation objectives and measures that have distinct purposes and benefits.

- **Adaptation** is the implementation of measures to enable coastal communities to change with the changing coasts.
- **Mitigation** is the implementation of measures to minimize the impacts on coastal communities of future change and specifically coastal hazards.

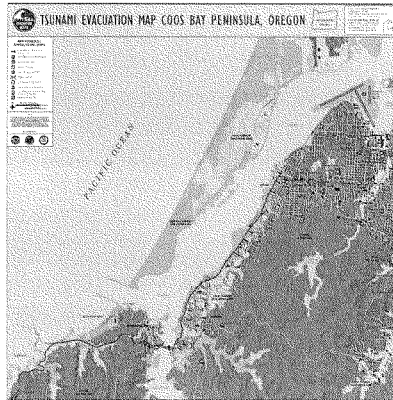
Four Step Process

- 1) Assess Risks and Vulnerabilities** – identify coastal hazards including inundation and flooding, erosion, and coastal storms and areas that are vulnerable to these hazards
- 2) Identify Solutions and Make a Plan** – identify social, economic, and ecological methods for reducing the impacts of these risks and make a plan for implementation
- 3) Implement Actions** – implement priority solutions to reduce coastal risks
- 4) Monitor and Measure Effectiveness** – observe and measure whether the solutions successfully reduce risk and evaluate needed changes

Role of State Programs

The 34 State and Territory Coastal Zone Management (CZM) Programs are leaders in the development and implementation of coastal adaptation, mitigation, and resilience strategies. CZM Programs are on the ground to support communities at every step along the path to resilience. They have the flexibility to operate across multiple levels of government and are uniquely positioned to link cutting-edge federal data and tools with local communities to address coastal changes and hazards.

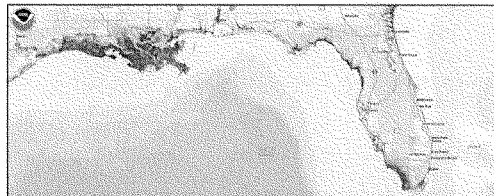
The Texas Coastal Management Program developed the Texas Coastal Resiliency Master Plan to provide a framework for community, socio-economic, ecologic, and infrastructure protection from coastal hazards, including short-term impacts such as flooding and storm surge, and long-term impacts such as erosion and habitat loss. The Plan identifies priority projects that mitigate these coastal hazards. As these priority projects are implemented, the Plan calls for monitoring and adaptive management to identify and learn about high performing projects to design more effective future projects as well as to improve coastal science, engineering, and planning for the next generation of coastal management. The Plan ultimately aims to protect and promote a vibrant and resilient Texas coast that supports and sustains a strong economy and healthy environment for all who live, work, play, or otherwise benefit from the natural resources and infrastructure along the Texas coast.



The Oregon Coastal Management Program (OCMP) has led an effort, in coordination with Oregon's Department of Geology and Mineral Industries (DOGMI), to prepare coastal communities for a local Cascadia Subduction Zone tsunami. Using CZMA funding, Oregon DOGMI produced inundation and evacuation maps, and the OCMP developed a land use planning guide, including example policies and codes, that communities can use to develop comprehensive plans that adopt development codes, plan for long-term relocation strategies, and methods to prioritize evacuation infrastructure improvements.

The Hawaii Coastal Zone Management Program is collaborating with emergency managers on the development of high-resolution, probabilistic tsunami design zone maps compatible with the American Society of Civil Engineers. The work has been a multi-year process to deliver more accurate mapping and modeling, which will also help lead to changes to county building codes for the safety and resilience of Hawaii.

Florida Coastal Management Program has developed the Coastal Adaptation and Resilience Tools Initiative and meets directly with smaller coastal communities with less capacity to provide risk and vulnerability data, mapping and planning tools to coastal communities to help them plan and make decisions to address coastal hazards and flooding risks.



The Coastal States Organization (CSO) is a nonprofit organization that represents the Governors of the Nation's coastal States, Territories, and Commonwealths on national ocean and coastal policy issues to maintain the health and vitality of our Nation's coasts.

Coastal States Organization
Washington, DC 20001
www.coastalstates.org



Senator CARPER. Thank you for that. We look forward to continuing to work with you and the folks that you lead.

I'm going to run to get a quick update on the Ukraine. I'll be back in just a few minutes.

In the meantime, I leave it in very good hands. Our Congresswoman.

Congresswoman ROCHESTER. Thank you, Mr. Chairman.

And thank you all for your thoughtful and thorough testimonies.

I also want to reiterate what Mr. Brockbank said about you being coastal champions. I think your testimonies really showed that.

And also thank you so much for the focus and inclusion on all communities across our country.

My first question is for Governor Edwards.

Again, thank you so much for joining us today.

The Corps has multiple authorities that permit the agency to conduct community outreach and planning assistance that help communities better understand Corps projects and design their own.

As the Governor of a State with significant rural and coastal populations, as well as major cities like New Orleans, how might the Corps provide better outreach to communities with diverse needs?

And it leads right from your last testimony.

Governor EDWARDS. Thank you very much for the question, Representative Blunt Rochester.

And I think Derek did an excellent job of summarizing how important this is, because while we get attached to what we have and we want to maintain it, and that's very important, sometimes we have to go beyond what we've done in the past, especially in the area of equity, because it wouldn't be an equitable problem had we done it right the first time. And so I think this is really important.

And what is going to have to happen I believe is, and the SHORRE Act helps to address this, the Corps is going to have to get off—continue to do its primary missions, flood control, aquatic ecosystem restoration, and navigation, but we have to elevate to an equal priority, put on par the mission of coastal restoration and ecosystem restoration. And then within that framework, make sure that we're doing so much of what the Biden administration is talking about with respect to equity, and it becomes a focus.

And by the way, it can be hard to define and quantify, but that doesn't mean it's not important and that we shouldn't try and that we can't do better.

And so that overall framework I think should permeate what the Corps does every day. And then it should guide the allocation of resources, which, even though we're going to be much more generous as a country with the Corps than we've ever been in the past, they will still be resource restrained. They won't be able to do everything, but at least they will have a focus and a mission that drives more investment in these communities that have been suffering for so long.

Congresswoman ROCHESTER. Thank you so much.

And as you mentioned, I mean one of the core functions of this Corps Act is to include that fourth mission for the Corps of restoration and protection of our coastlines as well as our riverbanks.

And I think, as you specifically kind of tying it back, when we—the reason why I think we have gotten the broad-based support is because we are looking at these things that intersect with different populations.

As the mayor mentioned, Slaughter Beach for the Corps might seem like a very small population. And so it becomes disadvantaged in a way from maybe larger places.

And so that's why this focus and looking at cost benefit in a different way is really important for this moment.

Governor, I also wanted to ask, the Town of Grand Isle and its barrier island were severely damaged by Hurricane Zeta in the fall of 2020 and then again by Hurricane Ida, less than 1 year later as you mentioned.

Supplemental funds were provided to help repair the federally authorized coastal storm risk management project there.

Given that climate change poses a compounding threat to communities like Grand Isle, should the Corps be authorized to rebuild coastal storm risk management projects to a more resilient and sustainable level when addressing post disaster repairs? Why or why not?

I think I know the answer. Just asking.

Governor EDWARDS. Yes, ma'am.

Congresswoman ROCHESTER. For the record.

Governor EDWARDS. Yes, ma'am. For the record, the answer is yes, they obviously need to be able to do that.

It really gets back to the build back better. If we know that the storms that we are currently experiencing are absolutely obliterating what we have built before, then continuing to rebuild to that standard is just foolish because it's not going to provide protection, it's not a use good of the funding.

And I will tell you, I've been Governor for a little over 6 years, I have made multiple trips to Grand Isle to look at those systems and to implore the Corps to do better and not just go back and redo what they've done.

And I think they're thinking along these lines now for the first time. And it's a great leap for the folks down in Grand Isle as well. But still a lot of work to be done there.

And Ida just slammed Grand Isle. We have people who are in their 80's, and they've been through hurricanes forever. This is, many of them, this is the first time they ever left the island for a hurricane. And when they came back, they saw devastation that they had never seen before.

And so it's very important that we improve the protection system there and make that island more resilient. Yes, ma'am.

Congresswoman ROCHESTER. Thank you, thank you.

And Madam Mayor, Mayor Lock, thank you for your leadership.

In addition to the economic concerns, Beach is home, as you talked about, to a diverse ecosystem featuring a symbiotic relationship between one of the largest horseshoe populations in the world, which I understand from the vice mayor goes back before the dinosaurs. I mean people here are shaking their heads as well. And it relies on horseshoe crab eggs as a food source.

How important is a healthy shoreline for the continued survival of the local horseshoe crab population, and by extension, the threatened red knot and other migratory birds?

Mayor LOCK. Well, certainly, Congresswoman, it is a critical component of the health and longevity and the continued sustainability of horseshoe crabs. They lay their eggs on sandy beaches.

You were at Slaughter Beach yesterday. We were able to see some of them on our beaches. These are clumsy, it's a clumsy species that crawls ashore.

Congresswoman ROCHESTER. No offense.

Mayor LOCK. Yes. Please don't take offense.

They're a slow moving, clumsy species. But they wouldn't be able to traverse a hardscape. A sandy beach is really what they need for their spawning.

And as I tried to say, they are critical to the health and wellness of human life. I know the pharmaceutical companies, I've read articles, they're trying to find something that would replace the blood of horseshoe crabs. Haven't been totally successful at doing that.

Congresswoman ROCHESTER. Thank you so much.

I also wanted to ask you, last year Slaughter Beach completed a study designed to evaluate management options for the persistent accumulation of a mix of seaweed and marsh vegetation caused in part by the sheltering effects of nearby Corps-constructed jetties.

And again, yesterday I got a chance to see this on the tour, exactly how the impact of all the sand coming down, hitting the jetty, and what that would mean. And this debris is detrimental to the local horseshoe crab population.

But we also know the jetty, all of this is important as well to our national security and our safety as well. So one of the solutions proposed by the authors of the study was to establish a pilot program for the beneficial use of the material in the construction and reinforcement of the dunes lining Slaughter Beach.

Since the completion of the study, what steps have been taken to manage the organic debris and what lessons have you learned throughout the entire process?

Mayor LOCK. That's a great question.

Actually, we have been in discussions with Delaware Department of Environmental Control on this issue of habitat restoration for horseshoe crabs and the red knot, the Division of Fish and Wildlife.

And we've asked for their support as we go forward to apply for grants to help us remove this buildup that's caused by the jetty.

But again, we're going to the State to look for a partnership and develop a partnership, when, in fact, it appears from the studies that this is caused by the deterioration of the jetty that was allowed to deteriorate in this century.

So it's a multifaceted issue, a multifaceted problem. And we're looking—we're only at the stage where we're looking at grants from the partnership with the Delaware Estuary to help us repair the damage.

Congresswoman ROCHESTER. I want to also highlight that part of what this hearing is also showing is, again, the partnerships and the need for the partnerships.

We actually have Secretary Sean Garvin behind the Governor. And I want to give him credit as well for the work that he is doing with the communities as well.

My next question is for Mr. Brockbank.

The Federal Government has sometimes struggled to provide coastal communities the assistance they need to address the effects of climate change. Fortunately, many coastal communities across the country have taken great strides to protect their shorelines despite that lack of Federal support.

Absent support from the Federal government, how are coastal communities addressing the impacts of climate change? And as a follow-up, what more could the Federal Government do to amplify these efforts?

And I know you said we're waiting to hear more from the Corps on some of the suggestions you could give us. But what are some of the lessons learned or the things that we should be amplifying from local communities?

Mr. BROCKBANK. I was wondering if maybe the Governors could hold up their Climate Action Plans again because I think that's probably the best example of what the states are doing.

Congresswoman ROCHESTER. We're not saying anything that Delaware's plan is bigger than Louisiana.

Governor EDWARDS. This is a summary.

Congresswoman ROCHESTER. Just saying, Governor Carney, again.

Mr. BROCKBANK. I mean I think the planning efforts that are happening at states, huge credit to both Governors for pushing these through.

But in Louisiana, they've been moving forward with a State Coastal Master Plan for 20 years now almost and have gone through multiple Republican and Democratic administrations, it's passed unanimously.

So there's a tremendous amount of planning that's going on. States are increasingly investing their own funding.

But I think one of the real challenges, we've often seen in big project implementation, you can do sort of small living shorelines, good beach projects, you know, small pocket beach projects, but those big programs have too often relied on disasters and the funding that comes after the disasters. Whether it's the BP oil spill, whether it's a hurricane.

And so I think the states have been able to do this incredible planning work. But now we need, Congress and the Federal Government needs to put the pocketbook to the test and actually invest in these projects and actually invest ahead of time.

It's been tremendous to see the infrastructure bill move forward, but that's a one-time down payment. There needs to be some consistent, regular funding so that the Governors and the Corps can actually plan their project out, farther out.

Congresswoman ROCHESTER. Excellent.

And I'm going to ask Mayor Lock, and it kind of dovetails into that question, too, as was already mentioned, Delaware is the lowest lying State in the country. And I will say lowest mean.

I always have to add that mean in there so that Florida and Louisiana don't come back at us and say no, we're lower, we're lower.

But Delaware is and has experienced sea level rise greater than eight inches along its coast since 1960.

On top of that, increasingly frequent and intense severe weather events, and as you called them, Mayor Lock, violent, violent coastal storms, including Hurricane Ida and the recent nor'easter, continue to damage our coastline.

Can you talk about, again, how your community, how your town has dealt with sea level rise and climate change, how it's affected you, but also what kind of things you're doing at a local level to mitigate?

And I know it's micro, and we've got macro.

Mayor LOCK. Again, an excellent question, Congresswoman.

We have, at a local level, we've been frustrated a bit by what we view as communication barriers between the partners that we're looking toward to provide guidance to protect against sea level rise.

I'll be honest with you, this is way above my pay grade.

Congresswoman ROCHESTER. Would you like me to take the question back?

Mayor LOCK. Please.

Congresswoman ROCHESTER. But again, this is a great dialog. And we're fortunate that we actually do have a Governor who has been a Congressman, has been a Governor, knows financial sector, and actually has a plan.

And Governor Carney, if you could just share what you think are some of the challenges and opportunities of this moment.

Governor CARNEY. Well, I think Mr. Brockbank has really hit the nail on the head, right. Up until this point, in my experience anyway, and we have folks behind me—and by the way, when I'm talking, I think Sean Garvin's lips are actually moving. He's got—

Congresswoman ROCHESTER. Hence the mask?

Governor CARNEY. I think he's got Tony Pratt sitting next to him, who knows more about—has forgotten more about this than many of us know.

So for so long, these restoration project shave been based on a disaster-driven kind of an approach. And that's how the money flows and it's based on cost benefit ratios that don't consider some of the things you and the mayor talked about and that are important parts of the calculation, whether there are environmental damages, whether you're comparing a town like Slaughter Beach to a town like Lewes, with Mayor Becker. They're very different in terms of size, in terms of property values, and all of that.

So how do you, and I think the SHORRE Act attempts to do this, is how do you consider other factors in analyzing a go or no go or limitations around what the Corps would participate in.

There's a project, an inland project that comes to mind in my experience called Glenville.

And you may remember the community of Glenville, which was flooded out completely by one of the hurricanes probably 25 or more years ago. 1989 I think was the first big flood there.

And it never quite made the cut with respect to the cost benefit analysis. Wasn't a high income community. And ultimately, this step, in part under Governor Carper's leadership, took the bull by the horns and provided resources, frankly, to purchase the properties, which were built in the flood plane in the first instance.

And so those kinds of projects, projects like situations like what we saw and we're seeing right here in Slaughter Beach. How do you factor those in to a new way of proceeding on funding for these projects through the Corps?

The problem is it's going to cost more money, right, because you're going to open up more eligible projects. And you're going to, I would assume, qualify other things that wouldn't currently qualify.

The SHORRE Act is certainly a really big step forward in that approach.

Congresswoman ROCHESTER. Thank you.

And I yield back to the chairman.

Senator CARPER. Thanks so much.

I had asked my staff in Washington to give me an update just before we got to the end. So we can do a press availability if there's anything new that we need to know about what's going on in the Ukraine, we'd be prepared to respond to questions.

Not to be alarmed. The situation is dire, serious. But nothing to be alarmed about further at this moment. So rest easy.

The last couple of questions. And I'd like to direct my first question to our Governor.

And Governor, as you know, Delaware is known for its pristine five-star beaches. We've been talking about them all day. And this is one of them. And a number of others are popular vacation spots for many people who live up and down the east coast. Actually people who live a long ways from here come here even outside the country.

We know that coastal communities are vital to the United States economy at large, but I'm curious to hear about their importance at the state level as well.

And my question is would you just take a moment and share with us a little bit about the importance of Delaware's coastline to our state's economy at large.

Governor CARNEY. I'm thinking about quoting our president when he was vice president, but I won't. But it's a big deal. It really is a big deal.

We talked about some of those numbers before. They're not numbers that approach the kind of numbers that Governor Edwards in a bigger state like his.

But for our State, just look at the coast from here. We're almost at the southern border here with Maryland, the Mason Dixon line, all the way up the Atlantic ocean beaches. The tourism industry that includes this and tourism in other parts of our State is a multibillion dollar industry.

Much of it is here in eastern Sussex County. You're talking about the property values of all these homes and communities. You're talking about smaller communities, like Slaughter Beach and the property values there.

If you do a calculation about the assessed value of properties that are located within areas projected to be inundated by a meter and a half of sea level rise, you're talking about over a billion dollars of that. So the impact is critical.

I think the question goes back to my answer to the last question, which is how do you factor in things other than economic value to

give a green light to Corps-funded projects and locally funded projects.

So it's critically important, and I think we have to find ways, but we have to find ways to factor in criteria other than those economic benefits into the analysis.

Senator CARPER. Thank you.

Governor Edwards, if you don't mind just responding briefly to the same question. Just share with us for a moment the importance of Louisiana's coastal area to your state's economy. We know it's great.

Governor EDWARDS. Yes, sir. And first of all, thank you very much for the question.

We're very proud of our entire State, but coastal Louisiana, the coast isn't just important to our state's economy. I think it's incredibly important to the Nation's economy.

Right around 45 percent of our population, 4.6 million people, live in coastal Louisiana. And as I mentioned before, there's tens of thousands of businesses there.

We have the second highest landings in the nation of seafood, but the best tasting. Whether it's our oysters, our shrimp, our crabs, our fish, you name it.

Five of the Nation's top 15 ports are in Louisiana, including the largest port by tonnage in the western hemisphere. Sixty percent of the nation's grain gets exported out of the Mississippi River. And we're deepening the river now. So that's soon going to be 70 percent of the nation's grain that gets exported will come through Louisiana.

Ninety percent of all the support for oil and gas exploration and production in the Gulf of Mexico is based out of Louisiana. And over half of the current L and G exports, which are increasingly important because of the Ukraine situation that you just mentioned if we're going to help our friends in Europe, they come from Louisiana. That's all along the coast. And it's not just traditional oil and gas.

The coast of Louisiana is going to be extremely important as we transition to low carbon and no carbon alternatives. Whether it's wind energy in the Gulf, the solar farms that we're going to need to support the petrochemical industry, they're going to be looking at coastal Louisiana, too, because that's where the industry is.

And so when it comes to carbon capture and sequestration, that's going to largely happen along the coast. Hydrogen production is going to happen along the coast in Louisiana.

And one thing that's really important, and I didn't realize this until we actually had our Climate Initiatives Task Force and they educated me in so many ways, an acre of marsh will naturally sequester 80 times the carbon as an acre of forest.

But we're losing that acreage. As we restore it, as we build it back, we're actually going to be sequestering more carbon.

So for all of those reasons and many, many more, coastal Louisiana is extremely important for our economy but also to the Nation's economy and to the nation's future.

Senator CARPER. Thank you, sir.

Let me ask a question, if I could, Governors, for everybody. And we'll just start, Derek, with you if we could.

As I noted in my opening statement, 40 percent of our Nation's population, that's about 130 million people, live in our coastal counties.

And if coastal counties in our entire country were considered as a Nation, we'd be like No. 3 in the world, right behind China and the U.S.

Unfortunately, the Corps does not fully account for the protection of this population, industry, and wealth when formulating coastal protection projects, nor does the Corps account for the financial benefits of tourism and recreation that are often attached to these projects.

My question of each of you, and Derek, we'll start with you, will each member of our panel please share with us how the Corps might better capture the economic importance of coastal communities when designing coastal protection projects?

Mr. BROCKBANK. Thank you for the question. Really at the heart of what this hearing I think the economic value of recreation is a clear one. I think increasingly there's going to be a need to look at access.

And I think I mentioned the racial justice, economic justice. I think considering how equitable the access to the coast is an exceedingly challenging thing to put into monetary metrics. But I think ensuring that the coast is the playground for America and not just the playground for the wealthy is a challenging thing and something I think the Corps need to think about.

Senator CARPER. Thank you.

Mayor.

Mayor LOCK. Thank you, Senator. I think that most analyses that are done with cost benefit ratios capture the cost of projecting solely the potential losses against the potential cost. And that's how the ratio is derived. To me, it's a very narrow approach.

And actually NOAA has become a leader in recommending and providing guidance to other Federal agencies that the cost benefit ratio should be modified and the approach to developing it should be modified to include ecosystems services.

And that means the cost of—if we're looking at just projecting losses, include in that the cost of restoring wetlands, the cost of water and food, the cost of job losses, the cost—I mean there's a world of things that could be considered when we're looking at cost benefit ratios.

And again, I believe that what the Corps does is a very narrow interpretation that should be expanded.

Senator CARPER. Thank you.

Governor Carney, Governor Edwards, you want to add anything, please?

Governor CARNEY. I would just add some environmental analyses as well as sustainability, in addition to recreation and to the effect on—and equity, which is a hard thing to measure.

But you talk about somebody who owns a house here worth over a million dollars, somebody lives in a less affluent community, that house is the same protection for that family in each community, just valued considerably differently.

And that doesn't factor in as well.

And I think this climate change measure of sustainability and I think the reference to either shoreline restoration or managed retreat, what should it be, what should the standard be, that's a little bit different than eligibility, but I think it really affects approach.

Prime Hook is I think a good example of that. I mentioned the Glenville project of years ago. Similarly, what is the sustainability of the solution and the design of the solution.

Governor EDWARDS. Senator Carper, thank you for the question.

Very quickly, I think all aspects of a coastal region's economic portfolio should be taken into consideration by the Corps in their cost benefit analysis.

As Mr. Brockbank mentioned, our coastal areas should be playgrounds for all of America. And I'm not just talking about tourism. I talked about a lot of things in my previous answer.

But tourism is usually important to all coastal states, but particularly to ours. We're known as the sportsman's paradise. We are a tremendous draw for fisherman, for hunters, for bird watchers, other outdoor enthusiasts.

The greater New Orleans area is a magnet for international tourism. Next Tuesday is Mardi Gras. A few weeks after that, we will host the sixth NCAA Final Four in New Orleans. No other city has ever done that. And that's just some examples that come to mind right now.

So all of that should be taken into consideration by the Corps so that they can drive their decisionmaking and their allocation of resources. And I think if they'll do that, then the importance of the coastal regions of our country will be more fully taken into consideration and drive those decisions.

Senator CARPER. All right. Thank you.

I have two more questions. One I'm going to address to Governor Carney. And then the last question, if I could come back to you, Governor Edwards.

Governor Carney, with respect to storm damage build-up, as you know better than almost anybody, the Corps can only provide emergency restoration assistance to nourish a beach when that beach has been damaged by a storm, other than ordinary nature, other than ordinary nature that prevents adequate functioning of the beach.

Parts of Delaware's coastline have been damaged, as you know, by successive severe weather events, including hurricanes, including nor'easters, and other tidal and storm events.

Though the damage from each of these individual events may not rise to the level of other than ordinary nature, collectively they have dramatically eroded and damaged parts of our coastline.

My question, taken together, how have the successive and compound effects of severe weather events impacted Delaware's economy and the safety of the affected communities?

Governor CARNEY. So we've talked a little about this before in terms of a different approach than just a disaster driven approach, where it's more of a management situation where you've got a series of increasingly less severe events, storm events. But taken together, they create really worse situations when you have the big event, if you will.

And so we've seen that here in Delaware this past fall and winter. A series of small storms can be damaging as one big large storm, right. Ida in our State is a great example of that and the limit of its extent. If you think about the serious rain event happened over the line in Chester County, Pennsylvania, along the Brandywine, but the effect was downstream in a very small poor minority community on the edge of Wilmington.

We've had a series of those kinds of events. And increasingly, we're going to see more of those.

Again, in Lewes, Mayor Becker, according to a 2000 report, we could see between 50 and 135 high tide flooding events per year by 2050. In 2019, there was nine of such events. So the intensity and the frequency of these events is going to increase.

And somehow, as we think about the future, we've got to start doing things differently than we've done them in the past because we have a new reality. And the new reality is climate change, it's sea rise.

In our State, we're going to have to manage shoreline restoration, we're going to have to manage retreat, to use Mr. Brockbank's terms. And factoring those into the work of the Corps I think is going to be really critical to our ability to deliver for the people of our State and the communities here.

Senator CARPER. Thank you.

Last question. Again, Governor Carney—

Governor Edwards, let's come back to Governor Edwards. A short question.

Would you please describe your state's experience working with the Corps on the matter of implementing coastal master plan projects to mitigate the impacts of Federal-authorized projects?

Would you please describe your state's experience working with the Corps on this matter of implementing the coastal master plan projects and highlighting the legal or policy barriers you can to implementation?

Governor EDWARDS. Yes, sir. Thank you very much. That, too, is a great question.

First of all, we have a great partnership with the Corps of Engineers, and it's not perfect and so forth. But this is one area that's incredibly important to us because we believe that when you analyze mitigation opportunities, or when the Corps does that, they should look to scientifically backed plans to coastal restoration and protection like we have in Louisiana.

And the Corps shouldn't always choose the cheapest option. We would want them to look at the option that's going to provide the most beneficial impact, the biggest restoration benefit, if you will. Especially if a non-Federal sponsor is going to be paying for it, like the State of Louisiana.

Now, the State and the Corps have been collaborating closely on the West Shore Lake Pontchartrain Risk Reduction Project, which, by the way, when it's built, it will protect the community that President Biden visited in the immediate aftermath of Hurricane Ida. It's a predominantly African American low income community, and it's going to benefit tremendously from this project.

But in that document, the Corps is going to consider the Maurepas Swamp diversion that we are doing as mitigation for the west shore project.

But we believe that internal policies currently existing in the Corps may well create obstacles that prevent them from adopting this common sense approach.

And by the way, that's why, one of the reasons, we so much appreciate the SHORRE Act because you would be giving them direction to do the things that we believe just make good common sense.

So I think that's an example of how the Corps can do better, how the SHORRE Act will drive them to do better, and then we will get the full benefit of the projects that we are doing that have a positive impact on the Federal investment by being able to use that credit toward our match obligations.

Senator CARPER. OK. Good. Thank you.

Thank you, all.

I was checking the mail. We got some mail at our house yesterday. I opened it up, we got something from Louisiana. And it was a photo and a card from Senator Bill Cassidy, who succeeded Mary Landrieu as a senator from Louisiana. It was a lovely picture of him and his wife and their three children.

And on one side of it, there were some words in French, and I don't recall exactly what the words were in French, but the translations were let the good times roll.

Governor EDWARDS. (Inaudible.)

Senator CARPER. Of course.

Congresswoman ROCHESTER. What he said.

Senator CARPER. I don't know that we're ready to let the good times roll here as we face this challenge of climate change and sea level rise.

But I do know this: Ben Franklin, a long time ago, really nailed it in terms of advice for us today and for later generations. He once said we came to this country in different boats but we're in the same boat now and our boat is in danger of sinking.

And we really did come here in different boats, literally and figuratively. And parts of our country are in danger of sinking. And the question is what do we do about it, what do we do about it.

And one of the things we need to do, go back to the C's, I like to say C, to communicate to compromise to collaborate. And those are three things that we're endeavoring to do and we have to endeavor to do even more energetically to communicate, to compromise, to collaborate.

We've had wonderful ongoing conversation with the Army Corps. We are really grateful to the?

Army Corps for all they do for our State, not just for our economy, but for quality of life and the ability to live here and raise our families and welcome strangers from other places.

But this hearing was designed to put a spotlight on the challenges we face and to say everything I do, I know I can do better. Everything I do, and I'll always thought this way. And I suspect if truth be known, we all feel that way.

And how do we enable the Army Corps to do better at their job given the changes that we face on our coasts. How do we enable them to do a better job. How do we do this in a collaborative way,

what are the roles of the states, what are the roles of the Federal Government, the Army Corps, in essence its citizens.

It's not enough to empower the Army Corps.

It's not enough just to change cost benefit analysis and the ability to work with those mechanisms.

It's also really important for us to address the root causes of why the seas are rising. That's really critical.

If all we do is the things we've talked about here today, we're still going to be in a world of hurt 10 years from now, 20, 30, 40, 50 years, still be in a world of hurt.

We've got to do both the walk and chew gum at the same time.

And I think here in Delaware and Louisiana we're smart enough to do that. And I believe Democrats and Republicans across the country, Congress and this president especially, we're smart enough to do that and it just takes the willpower and the willingness to lead.

The kind of leadership that I've seen demonstrated by both of you in the face of this pandemic, by the administration, by a lot of people, by National Guards, by all kinds of people during the course of this pandemic, that kind of leadership, we need that, not just for a couple of months or a year or two, but for decades, for decades.

And if we do that, years from now, when people come here to Bethany Beach or other beaches in Delaware or up and down the coast, they may not know their French that well, but they'll be in a position to let the good times roll. And they'll look back and say well, bless those people who had a hand in this.

Let me see. I have some housekeeping I just need to go through with respect to follow-up.

But before I do that, we have got, let me just say this on the record, we need to continue to equip this agency, the Army Corps, with the tools it needs to amply protect our Nation's coast and make them more resilient to flooding, to erosion, and extreme weather. And my hope and prayer is that today's hearing will better inform our work in these areas.

And now I just want to ask unanimous consent. I love asking unanimous consent at a hearing when I'm the only one there because I can only object to my own request. But now Lisa is here.

Congresswoman ROCHESTER. So moved.

Senator CARPER. But I'm going to ask unanimous consent to submit for the record reports and articles that relate to the impacts of climate change on our Nation's shoreline and coastal communities. These documents stress the severity of the climate crisis and emphasize the new realities as a Nation, that we face as a nation in coming decades.

Is there an objection? Hearing none. Additionally, our senators and our colleagues will be allowed to submit questions to our guests, our witnesses for the record through the close of business on March 9th.

We will compile those questions, we'll send them to our witnesses, and we'll ask our witnesses to reply, if you would, by March 23rd.

And with that, I just want to say John King is sitting here to my left. John heads up our water team on the Committee on Envi-

ronment and Public Works. He'll be largely writing, holding the pen if you will, as we write the Water Resources Development Act, which will hopefully include the SHORRE Act, and he does a great writing.

Terrific energy. He's like a bull in a China shop, but every now and then you need a bull in a China shop, and he plays that role. He's here with me.

The other members of our water team on EPW, just raise your hands. Thank you, all.

Congresswoman ROCHESTER. And acknowledge Alexandra.

Senator CARPER. Go ahead. Go ahead.

Congresswoman ROCHESTER. I just wanted to also acknowledge Alexandra Gallinin from our team in Washington, and we have other members like Andrew and Victoria in the back as well. But thank you so much, Senator, Mr. Chairman, for your leadership.

Senator CARPER. Kate Roar was here earlier. I don't know if Kate is still. Kate works for Senator Coons. Senator Coons sends his best. He is a senior member of the Senate Foreign Relations Committee and is in Munich for an annual, actually more frequent than annual, security meetings in Munich. He's attending that on behalf, along with some of my colleagues, on behalf of our country.

And I think that's it. It's been a good two and a half hours, a long time. But folks, there's not much more, many challenges and issues that are more important than what we're talking about here today. And we've got I think a better idea how to go forward and make sure that the good times continue to roll in the future. Thank you, all.

With that, this hearing is adjourned. Thank you.

[Whereupon, at 12:55 p.m. the Committee was adjourned.]

