

SUSTAINABLE & RESILIENT COASTAL COMMUNITIES  
Master Plan/Zoning/Resiliency Options Evaluation

**PART 2 MUNICIPAL OPTIONS REPORT**

NEW JERSEY FUTURE  
MARCH 2018



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Borough of Tuckerton



# A NOTE OF APPRECIATION

## Members of the Steering Committee

This report would not have been possible without the guidance, insights, and active participation of the members of the ***Little Egg Harbor Township/Tuckerton Borough Joint Steering Committee***:

- Sam Colangelo** ..... Member, Tuckerton Borough Council  
**Donna Dougherty**..... Little Egg Harbor Environmental Commission  
**David Fuller** ..... Osborne Island Homeowners Association  
**Jenny Gleghorn** ..... Administrator and Municipal Clerk, Tuckerton Borough  
**Ray Gormley** ..... Mayor, Little Egg Harbor Township  
**Garrett Loesch**..... Administrator, Little Egg Harbor Township  
**John Schwartz** ..... Tuckerton Borough Council  
**Lisa Stevens**..... Little Egg Harbor Township Council  
**Susan R. Marshall**..... Mayor, Tuckerton Borough

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## 1. Executive Summary

### a. Context

New Jersey Future has been working with officials, staff, and residents of Little Egg Harbor Township and Tuckerton Borough since shortly after Hurricane Sandy struck the state on Oct. 29, 2012. This affiliation began when both municipalities agreed to participate in New Jersey Future’s Local Recovery Planning Manager Program. The LRPM program was launched in December 2012 with encouragement from the Federal Emergency Management Agency and funding from the Merck Foundation. Subsequent contributors to the LRPM initiative included the New Jersey Recovery Fund, Center for Disaster Philanthropy, PNC Foundation, PSEG Foundation, Wells Fargo Foundation, and the New Jersey Department of Environmental Protection.<sup>1</sup>

Little Egg Harbor and Tuckerton joined four other LRPM program participating towns: Sea Bright Borough and Highlands Township in Monmouth County; and Commercial and Maurice River townships in Cumberland County (see **Figure 1**).

Work began in Little Egg Harbor when the township passed a resolution of program engagement in July 2013, and in Tuckerton in October 2013 when the borough passed its resolution. Initially, New Jersey Future’s work with the municipalities focused on assisting with the urgent task of storm recovery. However, over time, as New Jersey Future’s relationship with the communities evolved, the recovery managers began preparation of a Strategic Recovery Planning Report (SRPR).<sup>2</sup> That report described the detailed, parcel-based risk analysis that was performed to examine flooding conditions based on 2050 sea-level rise projections, and evaluate the impact of those conditions on the assessed value of the community. The intent was to enable the communities to chart initiatives they could pursue to become resilient to these threats. Little Egg Harbor Township’s [Vulnerability and Exposure Analysis](#) was released in February, 2015 and Tuckerton Borough’s [Strategic Recovery Planning Report](#) was released in March 2015.

After completing the SRPRs, New Jersey Future took advantage of the opportunity to continue land use and resiliency planning work with Little Egg Harbor Township and Tuckerton Borough through the Sustainable and Resilient Coastal Communities Grant Program. The S&RCC program is funded through the National Oceanic and Atmospheric Administration and managed by the New Jersey Department of Environmental Protection’s Office of Coastal and Land Use Planning, which administers the New Jersey Coastal Management Program (NJCMP). Through the S&RCC program, the NJDEP seeks to fund pilot comprehensive planning approaches that identify actions municipalities can take to respond to coastal

Figure 1: LRPM Program Participating Towns



<sup>1</sup> For more complete information on the LRPM program and access to a full report recounting the experiences, accomplishments, and lessons learned see <http://www.njfuture.org/research-publications/research-reports/in-deep/>

<sup>2</sup> Starting in June 2013, communities could receive Community Development Block Grant – Disaster Recovery funds to prepare SRPRs through New Jersey’s Post-Sandy Planning Assistance Grant Program, administered by the Department of Community Affairs’ Office of Local Planning Services. Little Egg Harbor and Tuckerton received program grants.

hazards while protecting New Jersey's coastal resources. The intent is to apply project outcomes to inform potential changes in the Coastal Zone Management Rules (N.J.A.C. 7:7), which regulate the use and development of the state's coastal resources, and ensure that coastal hazard risks are addressed.

A core objective of the S&RCC program is to create a model for actions all coastal communities can take to examine land use and infrastructure development decisions in response to risks associated with projected sea-level rise. In December 2017, New Jersey Future released a comprehensive S&RCC report detailing specific strategies and implementation options to reduce vulnerability. The report also outlined steps the state can take to support, guide and coordinate local resiliency efforts.<sup>3</sup>

This Municipal Options Report, the third in the report series that began with the 2015 SRPRs, chronicles efforts undertaken in the second phase of the S&RCC project and is the culmination of vulnerability and risk analyses. This report describes specific actions and strategies that Little Egg Harbor Township and Tuckerton Borough can take, including master plan changes and zoning regulation amendments, to enhance resilience. The recommendations of the report and the areas of focus in this phase of the project respond to specific direction the project team received from the joint Little Egg Harbor Township/Tuckerton Borough Steering Committee. The Steering Committee has guided all of the work New Jersey Future has undertaken with the communities over the past five years.

## b. Report Elements

This report provides specific guidance to the officials from Little Egg Harbor Township and Tuckerton Borough. Accordingly, the report describes:

- The relationship of the present report to the December 2017 Sustainable and Resilient Coastal Communities report;
- The overarching Phase 2 project objectives;
- A detailed description of the observations and recommendations of the two focus groups that New Jersey Future convened for specific input regarding implementation of more stringent building standards and the methods and outlets each community can and does employ to communicate information about climate change risks;
- Model coastal overlay zone boundary descriptions, explanation of the zones' purpose, proposed ordinance language, site plan review standards, a recommended review process; and project evaluation criteria;
- A description of implementation options that were deemed most relevant to Little Egg Harbor Township and Tuckerton Borough and most likely to be accepted by residents of each town;
- An evaluation of Little Egg Harbor Township's and Tuckerton Borough's master plans and zoning codes and recommended changes to consider coastal hazard risks in order to achieve resilient community design

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<sup>3</sup> For the full S&RCC report see <http://www.njfuture.org/2017/12/13/resilient-coastal-communities-report/>

### c. Project Team

**New Jersey Future**, a nonprofit, nonpartisan organization, assembled an experienced and knowledgeable team to undertake the scope of work for this second phase of the S&RCC project. **David Kutner**, PP AICP, New Jersey Future’s planning manager, is the project manager. Mr. Kutner has considerable background in land use, community, and environmental planning. For the past five years, he has overseen New Jersey Future’s Local Recovery Planning Manager program. **Leah Yasenchak**, PhD, AICP PP, CEcD; **Katie-Rose Imbriano**, AICP PP; and **Jessica Jahre**, PP AICP CFM are with **BRS, Inc.**, a consulting firm that helps local government entities plan and implement redevelopment and resiliency projects and specializes in environmental management and policy. For the past four years, Dr. Yasenchak, the co-owner of BRS, also served as a local recovery planning manager under New Jersey Future’s Local Recovery Planning Manager Program, providing on-going, direct assistance to Little Egg Harbor Township and Tuckerton Borough. Ms. Imbriano provides municipal planning services through BRS. Ms. Jahre is a planner with experience in project management, communications, urban design, geospatial analysis, and research.



## 2. Relationship to the Sustainable and Resilient Coastal Communities December 2017 report

In December 2017 New Jersey Future released a report outlining strategies coastal communities can use to respond to the impacts of rising sea levels and increased flooding. The report was a product of the first phase of the Sustainable and Resilient Coastal Communities (S&RCC) project, funded by the New Jersey Department of Environmental Protection Office of Coastal and Land Use Planning (OCLUP). The goal of the project phase was to evaluate the state's current rules for designating development centers along the coast and determine how the boundaries of such centers should be redefined based on future projections of coastal flood risk and sea-level rise. The report also examined a broad range of implementation options for revising local land use plans and zoning regulations to enable municipalities to increase resiliency.

Three communities participated in phase 1 of the S&RCC project - Little Egg Harbor Township, Tuckerton Borough, and Toms River Township - to evaluate the level of interest in proposed options, engage in a dialogue on implementing changes, and provide a real-world context within which to develop and explore the ideas proposed in the study.

The implementation strategies outlined in the 2017 report fall into six major categories:

- Disclosing hazards;
- Protecting and restoring marshes and wetlands;
- Enacting more resilient building codes and standards;
- Minimizing public investments in flood-prone areas;
- Refocusing development away from high-risk areas; and
- Re-aligning capital investment priorities.

The report acknowledges that some of the proposed implementation options, such as more resilient building codes and standards, could be enacted through local regulation. However, several, such as rolling easements for marsh and wetlands protection, require coordination with or guidance and support from various state or federal agencies.

The report also indicates that it will be necessary to explore new approaches to financing acquisition of property in areas at risk of inundation due to the effects of rising sea levels and a changing climate. It notes that the value of at-risk property along New Jersey's coastline is orders of magnitude greater than the amount of money that is available to fund mitigation, adaptation, and/or acquisition. The new approaches the report describes include risk insurance policy surcharges; social impact bonds, environmental impact bonds; and disaster/catastrophe bonds. Considerable research is needed to determine exactly how these financing options could be implemented in New Jersey, but it is evident that implementation of any of them will require the coordinated involvement of state-level agencies, private sector insurance and finance industries, non-profit organizations, and municipalities.

The report also notes that although local governments in a home rules state are on the front line of risk response, an effective resiliency initiative in New Jersey demands active state-level support, guidance, funding, and participation. Because municipal officials are often not equipped to perform risk assessments or conduct the public discussions necessary to explain to their constituents why transformations of long-standing land use patterns may be necessary, the state needs to take the leading role to address state-wide implications of climate change risks.

### 3. Project Objectives

The objective of this phase 2 report, prepared specifically for Tuckerton Borough and Little Egg Harbor Township, is to translate the recommendations from the 2017 S&RCC report into an action plan the towns can follow to increase resiliency. The study was conducted in a targeted manner to examine how these adjacent municipalities would go about applying the recommended implementation options. To inform the expansion of the implementation options further, in October 2017 the team conducted two focus group meetings; one to discuss options to enhance building restrictions, and another to learn how information about sea-level rise threats and risk response should be communicated. The outcomes from those meetings are described in **Section 4**, below.

Through additional research conducted during this report phase, it became clear that in order for the towns to enact any of the implementation recommendations, a better understanding of the mechanics of overlay zones would be needed. According to the 2017 S&RCC report, the geographic area across which selected resiliency options would apply would be based upon the flood zones boundaries for each area (see **Figure 2, Proposed Coastal Overlay Zones**, p. 16). The particular mix of implementation options applied in each zone is based on each municipality's determination of the level of protection it wants the measures to achieve. Protection levels range from most risk-adverse to least risk-adverse. More aggressive measures achieve greater protection but also require imposition of greater development limitations. The towns sought to balance protection with the impact the options might have on their residents. This report and the 2017 S&RCC report include detailed descriptions of the use of overlay zones.

In the course of preparing this report additional, in-depth research was conducted on the following selected resiliency options that the towns indicated they were willing to consider:

- Hazard Disclosure: Disclosure Requirements
- Limit Shoreline Armoring to Enable Marsh Migration:
- More Stringent and/or Resilient Codes
  - Increase or Establish Freeboard Requirements
  - Adjust Building Setbacks
  - Restrict Rebuilding
  - Modify Substantial Damage/Improvement Thresholds and Calculations
- Building Restrictions: Limiting Building Size/Density

In addition to researching how the options listed above would apply to Tuckerton and Little Egg Harbor, the project team assessed requirements for emergency access and redevelopment area designation. The team selected these options based on feedback from the initial phase of the project indicating that these additional strategies were relevant to the two towns and would most likely to be considered for implementation. The team identified where all of the options have been used successfully elsewhere to inform how resilience planning can be implemented effectively in Little Egg Harbor and Tuckerton.

The project team reviewed and annotated each town's Master Plan and the Zoning Ordinance to determine where revisions should be considered so these documents can guide implementation of the recommended resiliency options (see **Appendix 2 to 5**). ***The recommendations in this report are provided as a model and are not intended to be adopted as written but should be reviewed and modified as needed by municipal staff and attorneys to ensure that each recommended provision is consistent with the provisions and intent of each municipality's zoning ordinances and the master plans.***

## 4. Focus Group Meetings

### a. Additional Public Outreach – Focus Groups

In an attempt to focus on obstacles to and support for selected implementation options, the New Jersey Future project team conducted two focus group sessions on Thursday, Nov. 8, 2017. The session topics were Building Restrictions and Public Outreach. The focus group participants were solicited through invitations from the Steering Committee, religious organizations, homeowners' associations, the Coastal Education Center at the Jacques Cousteau National Estuarine Research Reserve (JCNERR), realtors, and individuals from prior public meetings. Attempts were made to involve individuals from various age groups and to include primary homeowners; secondary homeowners; renters; elected officials; realtors and developers representing Tuckerton Borough and Little Egg Harbor Township.

Both focus group sessions were facilitated by David Kutner of New Jersey Future; and Leah Yasenchak, Katie-Rose Imbriano, and Jessica Jahre of BRS. Michael Kolber of OCLUP participated as an observer.

### b. Building Restrictions:

#### 1) Focus Group Participants

The participants of the building restrictions focus group were: Sam Colangelo, councilman in Tuckerton; Joe Delgrosso of Tuckerton; John Schwartz, a councilman from Tuckerton; Frank Fehn, Tuckerton; Phil Reed, the construction official from Tuckerton; and Jody Stewart of Little Egg Harbor and New Jersey Organizing Project, a group assisting victims of Hurricane Sandy.

The focus group explored how to implement more stringent building standards to protect residents against future sea level rise. Facilitators solicited feedback on two core project recommendations: (1) whether floodplain building restrictions should be extended beyond the existing 1 percent floodplain; and (2) whether regulations should be established to decrease density over time in areas affected by sea-level rise and limit exposure in areas affected by storm surge and coastal storm flooding.

The objectives of the discussion were to identify:

- Potential points of contention or concern relating to additional regulatory restrictions;
- Stakeholders or groups that may benefit from targeted engagement before a regulation is implemented; and
- Factors that would encourage or discourage residents whose homes may be vulnerable to flood inundation to relocate to less risky areas within their community.

Image 1: Building Restriction Focus Group 11-8-17



In order to begin the discussion and orient the participants to the topic, the New Jersey Future project team developed a brief survey which attendees were asked to complete as they arrived at the meeting. The survey, included as **Appendix 1** to this report, consisted of the following questions:

**Participant Survey/Responses**

- **Do you live in a floodplain?** All respondents indicated that they live in a floodplain.
- **Were you affected by Sandy?** All respondents indicated that they were affected by Sandy.
- **What non-personal factors may affect your decision to stay in the area? (check all that apply)**
  - *Another storm* ..... 3 votes
  - *Regular nuisance flooding that affects normal life* ..... 3 votes
  - *Change in affordability of taxes/housing*..... 4 votes
  - *Flood insurance requirements/affordability* ..... 2 votes
  - *Change in character of building stock* ..... 1 vote
  - *Change in access to marinas, lagoons, bay* ..... 2 votes
  - *Change in demographics* ..... 2 votes
  - *Change in traffic/density/population* ..... 2 votes
  - *Other*..... climate change
- **What is your biggest concern about living near the coast in the future?**
  - Flooding/sea-level rise
  - Cost vs. benefit
  - Storms
  - Can I afford to stay?
  - Plans for future maintenance of roads and waterways, education and development planning

The majority of the attendees in this focus group were from Tuckerton, and the conversation was influenced by the borough’s approach to resiliency. Two of the members of the group were councilmen and a third was the borough’s construction official. Because of the group’s composition, the project team received excellent insight about whether the local officials believe their measures of protection are effective and what implementation elements they feel are most important. However, such strong representation of the official viewpoint limited the discussion about whether homeowners, developers, and others might be willing to support even more restrictive building regulations that would decrease vulnerability to recurring tidal flooding and storm events. Our observation is that a municipality’s political imperative to sustain a strong tax base and economic viability, is not always entirely aligned with the residents’ individual safety concerns. However, resident interest often drives political will.

**2) Potential points of contention or concern**

The focus group discussion specifically targeted concerns participants had about evolving building restrictions. Several comments emphasized the importance of ensuring that regulations are simple to understand, predictable, and reliable. Towns should ensure that the regulations are restrictive enough to avoid interim changes (i.e., after Sandy, some homeowners in neighboring towns elevated structures to what they were led to believe were the applicable standards, only to find that later elevation requirements

were subsequently increased). Focus group members believed that people are willing to raise their home higher if it is clear that the standard won't shift in the short term.

Because this group was comprised primarily of public officials, it isn't surprising that they focused on the impacts that building restrictions could have on the municipality, as opposed to the effects these restrictions might have on individual homeowners. The group was particularly concerned about the impact that buyouts would have on the tax base and the municipality's consequent ability to maintain services.

The municipal officials were also concerned about the need to avoid granting variances from applicable requirements. Individual homeowners are willing to jump through many hoops to obtain the permits and have frequently sought exemptions to enable reconstruction projects. Review and approval of countless exceptions required considerable municipal resources. Tuckerton officials reported that they granted only one variance to the floor area ratio (FAR) requirement that was enacted post-Sandy, designed to encourage homeowners to remove enclosures below the lowest floor. Minimizing variances was viewed as an important component of predictable, uniformly enforced regulations.

Overall, Tuckerton officials felt they had responded particularly well to the threat of sea level rise, that they passed proactive, straightforward regulations that are uniformly enforced. Examples of these regulations are the increased freeboard requirements of base flood elevation plus three feet, and the restricted FAR. While officials reported tracking elevation certificates closely, they did cite problems, such as the difficulty in getting the exact LIDAR (Light Detection and Ranging) data that was necessary to establish baseline elevations, especially in lagoon areas. They also pointed out that regulations are designed to address storm surges that can be predicted based on **current** conditions; they expressed concern about using sea level rise projections as a template for limiting or regulating development, given the inherent uncertainties in such projections.

Focus group members disagreed about whether imposing greater building restrictions was practical. Some participants felt that municipalities as a general rule, would not consider further building restrictions, while others thought that there was some appetite for limiting new development (though this was an academic discussion, as there is no developable land left in these towns along the shore); imposing additional taxes on new construction and additions in the flood-prone areas; and lowering permitted development densities to reduce the number of people at risk. Focus group participants pointed out that the more restrictive FAR imposed in Tuckerton had in some instances encouraged people to buy adjacent lots so that they could construct larger homes. It was suggested that if the state covered permitting costs it would serve as an incentive to encourage more homeowners to make resilient changes. Participants were also interested in adaptation techniques beyond building restrictions, such as pump systems to increase resiliency.

### **3) Constituents that may benefit from targeted engagement before implementing regulations**

Focus group participants emphasized the importance of communicating building restrictions, in particular elevation requirements accurately to residents. They cited leading by example as a particularly effective way to communicate – for example, Tuckerton co-located its municipal offices and police department in a new multi-use building that is not prone to floods. In addition, they emphasized the importance of informing potential homeowners about risk prior to their making a decision to purchase, perhaps by using a modified [Seller Disclosure Form](#). This step would not only reduce liability on others, but also help guarantee a population that is more willing to endure some amount of flooding. Several participants believed that Realtors don't always disclose sufficient information about flood risk or storm damage.

#### 4) Factors that encourage or discourage residents to stay in the community

Building restrictions and the level of education/engagement in a community are important components for residents in deciding whether to remain in their homes in an area vulnerable to floods. However, focus group participants maintained that the biggest factor in such decisions is affordability. Focus group members indicated that with or without sea level rise, taxes would continue to rise. However, they felt that for homes in flood-prone areas to continue to be attractive, it was the municipality's responsibility to use these increased tax dollars to undertake projects that enable the community to adapt to rising water, and to do so in a way that maintains the livability of the area. For example, when Tuckerton elevates roads that experience frequent flooding, the town also pays to raise abutting driveways, and does not place that cost burden on its residents. However, the focus group participants acknowledged that flood vulnerability can eventually result in devaluation of waterfront properties. This was the case in Little Egg Harbor Township right after Sandy, as many residents appealed the property taxes on their damaged homes. As a result, most of the increased tax burden fell on upland properties until the lagoon neighborhoods were able to recover.

While there was a general sense that people should be able to assume individual risk by taking individual responsibility, there was also broad acknowledgement that more people should have flood insurance to ensure that they are able to recover from a storm. Participants believed that a surprising number of people do not carry such insurance, and they must not fully understand the importance of it. The group also discussed the problems inherent in homeowners hiring professionals to appeal findings of substantial damage, which would require them to comply with the strictest building standards. Participants were intrigued by the idea of reducing substantial damage thresholds (i.e. from 50 percent to 40 percent) or in the use of cumulative accounting, where a structure is considered substantially damaged when the sum of the costs of damage over a given period of time exceeds the substantial damage threshold. Several saw this as a useful tool for upgrading the overall building stock over a shorter period of time.

Participants generally agreed that living at the shore will continue to be attractive, and that people will be willing to adapt to more frequent floods. Answers to "when would the flooding become a big deal?" included: "when it is above my 14-foot high front door," and "when I can't get out of my front door." Participants pointed out that residents watch the tides religiously, and even the US Post Office knows to flip the route of the mail carriers depending upon the tides, to avoid delivering in areas when they are flooded. Even without a national flood insurance program, participants insisted, people will still live near the water. In addition to personal choice, there are many current owners who owe more on their homes than those homes are worth and have no choice but to continue to live in these properties out of financial necessity.

Despite the belief that there will always be some people who are willing to make the necessary adaptations and accept the risks that come from living at the shore, participants acknowledged that some people may accept buyouts through programs such as Blue Acres. However, they also agreed that people who do accept buyouts are unlikely to relocate to elsewhere in town. This could be overcome if the Blue Acres program was modified to offer incentives to relocate within an affected town or county. Such inducements were made available through [New York Rising](#), which offered homeowners a 5 percent In County Replacement Dwelling Incentive, a 10 percent Enhanced Buyout Incentive to relocate from high risk areas, and a 10% Group buyout Incentive

## c. Communication and Outreach Focus Group

### 1) Focus group participants

The communications and outreach focus group participants were: Harry Disbrow, a Realtor and owner of Bayshore Realty; Kaitlin Gannon from JC NERR; Ed Andrew of Osborne Island; Ray Gormley, the mayor of Little Egg Harbor; Ed Gautier, a member of the Little Egg Harbor Planning Board; Sue Marshall, the mayor of Tuckerton Borough; Lisa Stevens, a Little Egg Harbor Councilman; Chuck Griffin of the New Jersey Organizing Project; and John Spodofora, the mayor of Stafford Township.

Image 2: Communication Focus Group 11-8-17



The goal of the focus group was to understand more clearly what methods and approaches to communicating risk of coastal hazards to residents, potential buyers, and businesses would be effective. Participants saw this as critical to ongoing communication and education around this topic. For this discussion, the following objectives were set:

- Identify existing social networks within the community;
- Understand how individuals discover information in general (i.e. newspapers, television, Facebook, municipal website, social networks);
- Understand how these individuals get information specific to coastal hazards or to risks related to home-buying decisions; and
- Receive feedback on existing communication and outreach techniques.

### 2) Identify existing social networks within community

The existing social networks identified by the focus group include civic associations; informal neighbor networks; and the Ministerium, a non-profit group made up of seven area churches. They saw the informal neighbor networks as the most effective and prevalent, with neighbors watching out for one another's homes. This was particularly true for second-homeowners: Typically, a year-round resident would have a key and would be able to let the absent homeowner know if there was trouble. Focus group members reported that the Ministerium was an untapped resource for communicating information; while it is active throughout the area, officials have not used it for this purpose.

### 3) Understand how individuals find out information in general

Focus group members began by discussing traditional information dissemination tools that are either no longer in existence or no longer widely used. They discussed a Welcome Wagon/Welcome to the Community publication that used to exist and that provided resources and information to people new to the community. In addition, some businesses used to produce a newsletter that provided some community information. Participants pointed out that many people don't read newspapers anymore, and broadcast news isn't hyper-local, so those traditional methods of communication aren't effective.

However, a large percentage of people do have cell phones. Taking advantage of that accessibility, such as by using the Police Department's [Nixle system](#) or a reverse 911 system, is an easy and effective way to disseminate information. The reverse 911 system can be used during emergencies such as storms or forest fires.

Additional methods of communication and outreach discussed included distributing information at civic association meetings, running public service announcements on local television, posting information on the municipal calendar and the internet (though it was noted that not everyone has internet access). In addition, Little Egg Harbor and Tuckerton have flashing signs that can be used to transmit information in emergencies, and the building departments will meet one on one with people to explain building requirements. Information can also be distributed along with property tax bills, through homeowner's insurance companies, or through the towns' "adopt-a-drain" program.

#### **4) Understand how coastal hazards information is conveyed**

Participants noted that the towns do a good job of communicating short-term risk, but a bad job of conveying information about long-term risk. People need to know what to expect in the future and how to prepare for it. Without this information, not only are people unprepared to respond to future conditions, but they also tend to view increased flooding not as a natural occurrence but as a condition caused by direct human activities such as overdevelopment or inadequate drainage due to poor maintenance or improper systems. Thus, people often blame "nuisance" flooding on the municipality, for not providing sufficient stormwater drainage.

When people purchase homes, realtors are obligated to disclose information about flood risks and prior flooding that has occurred during the tenure of the seller. This disclosure, along with the flood insurance that would be required by a mortgage holder, is the primary method of educating new homeowners about flood risks. In addition, homeownership insurance renewal forms provide information about flood insurance. However, this only provides a picture of past and, to some extent, current risk, not the threats the prospective buyer is likely to face in the future. The focus group engaged in extensive discussion of disclosure requirements. Some participants noted that emphasizing flooding risks was not in the interests of the realtor, and that the disclosure obligation did not exist if a sale was private. In addition, a real estate professional from the focus group recounted that flood disclosures don't necessarily discourage people from purchasing a house in a flood zone. It is assumed that people who are informed about flood risk but nevertheless purchase a flood-prone property are more tolerant of recurrent flooding and are willing to take personal responsibility for the risk.

Participants felt that if educating people about flood risks is intended to keep them from building houses near the water, such an effort conflicts with the municipality's desire for ratables. Making building codes more protective results in making waterfront homes more expensive. This in turn reduces the number of affordable homes available to buy or rent, adversely affecting the towns' affordable-housing obligations. Additionally, participants pointed out that building standards are dictated by the New Jersey Department of Community Affairs (NJDCA) via the federal Uniform Construction Code adopted for use in NJ, and FEMA. Five years post-Sandy FEMA has yet to release final Flood Insurance Rate Maps, frustrating the towns which must allow people to rebuild and/or elevate their homes. If the building standards the towns use as the basis for granting permits are inadequate, federal and state governments need to communicate that information to municipalities. The state should develop a standardized template for responding to disaster claims. Focus group participants' experience with the Reconstruction, Rehabilitation, Elevation (RREM) program underscored this need. People were allowed to rebuild as-is; this reinforced some

people's misperception that coastal conditions haven't changed and will remain the same.

Members of the focus group observed that this understanding is challenged by visible erosion, particularly noticeable for long-term residents. However, acknowledgement of changing coastal conditions may not be the primary factor in purchasing insurance. Some people live in a flood-prone area with no mortgage, and they choose not to have flood insurance. This is particularly true in the less expensive part of Little Egg Harbor Township for people who paid cash or for those whose home has been in their family for long enough that there is no mortgage. People with limited resources tend to choose the least expensive option; elderly people on fixed incomes may not be able to afford flood insurance, and the value of the house may not justify the premiums for flood insurance. Often the land is more valuable than the house that sits upon it. While new homeowners feel more confident about buying a property if it is elevated, some of the owners of small bungalows chose not to elevate if they weren't required to, whether or not they had insurance. Some chose not to elevate because they are elderly and are not able to climb the stairs and are unable or unwilling to move elsewhere. Thus, these people remain in harm's way, adding costs to the community.

Several participants indicated that many community residents felt that Sandy was a once-in-a-lifetime storm that occurred because of a unique set of circumstances that is unlikely to recur. However, overlaying older coastal maps with more recent versions clearly demonstrates to residents the magnitude of coastline changes over time, providing proof that a severe coastal storm is not a one-time occurrence. Discussing climate change is difficult, but it isn't necessary to convince people of climate change in order to discuss flood risks. However, perspective is necessary when discussing risk – people chose to live in areas all the time that are at high risk for natural disasters. Even in Tuckerton Beach, which floods repeatedly, people continue to build expensive homes. Residents seem to be saying that “as long as there is enough road surface for the kids to walk to school, this is a good place to live.” People are unlikely to pay attention to messages about risk unless or until they see that they will be affected personally.

## **5) Feedback on existing communication and outreach techniques**

Focus group participants indicated that they believed that good methods of communication include distributing information using municipal resources, such as including flyers about risk once a year with utility bills and posting notices on the police department's flashing signs that are used to convey emergency messages such as “Storm is coming.” Focus group members noted that some towns send brochures to residents about long-term risk preparation to earn credit under FEMA's Community Rating System (CRS) program. However, the best way municipal officials can communicate with residents is to attend civic association meetings to present information on long-term preparation personally. Particularly for the elderly, direct contact is important to enable each person to express his or her individual concerns and provide them opportunity to visit the Building Department to discuss resiliency measures, on a one-on-one basis, with the building officials. Because people are unlikely to pay attention to risk until they are affected directly, municipalities should prepare a standardized set of information packets that is available at all times for distribution to interested parties.

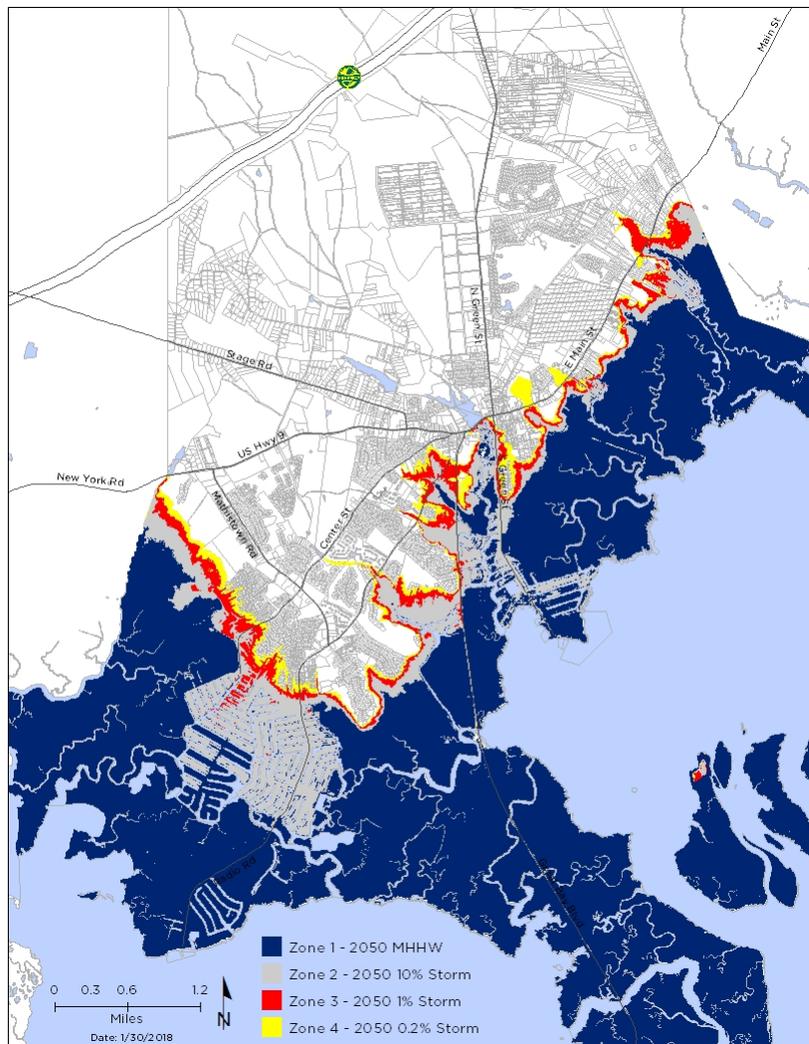
## 5. Considerations for Coastal Overlay Zones

Overlay zoning is a regulatory tool that creates a special zoning district, placed over an existing base zone or zones, and imposes special provisions in addition to those in the underlying base zone(s). Overlay district boundaries can match those of the base zone or cut across the boundaries of the underlying district. Overlay zoning is typically used as a framework for implementing regulations or incentives designed for natural resource protection - such as groundwater recharge areas - or to guide development within a special area, such as historic districts or along a transit corridor. <sup>4</sup> Overlay zones in the context of resiliency planning are critical because they provide the basis for implementing various regulatory options based on the amount of flooding anticipated in a geographic area.

The 2017 Sustainable and Resilient Coastal Communities Report identified the following four sub zones of Little Egg Harbor Township's and Tuckerton Borough's proposed coastal overlay district:

- **Zone 1** corresponds with the Mean Higher High-Water line seaward, based on 1.48 feet of sea-level rise by 2050<sup>5</sup>. This land is vulnerable to frequent nuisance flooding, erosion and overtopping of shoreline protection structures. This is also the area that is most vulnerable to wave action and storm surge from coastal storms. This would be the land within the municipality that is most vulnerable and at highest risk for flooding.
  
- **Zone 2** corresponds to the land between the landward extent of the Mean Higher High Water (zone 1) and the boundaries of the estimated 10 percent flood zone in 2050. This area has a 1 in 10 annual chance of coastal flooding with 1.48 feet of sea-level rise. This designation is not currently covered under FEMA's regulatory flood maps, but it represents an area that is at significant risk for flooding.

Figure 2: Proposed Coastal Overlay Boundaries



Note: See Appendix 6 for a full-page version of Figure 2, above

<sup>4</sup> "Planning Implementation Tools: Overlay Zoning." Center for Land Use Education. University of Wisconsin. November 2005

<sup>5</sup> Sea-level rise projections were obtained from a [2016 report](#) prepared for the New Jersey Climate Adaptation Alliance by its Science and Technical Advisory Panel (STAP).

- **Zone 3** corresponds to the land between the estimated 2050 10 percent flood zone (zone 2) and the 2050 1 percent flood zone. This area has between a 1 in 10 and a 1 in 100 annual chance of flooding from a storm event. The boundaries of this zone are based on the extent of the FEMA 1 percent flood zone, assuming 1.48 feet of sea-level rise by 2050. This is an expansion of the current regulatory requirements of 1 percent flood zone, where property owners are required to purchase flood insurance on federally backed mortgages, as the proposed zone 3 would extend these protections to areas that will likely be at risk from sea level rise. This area is at moderate risk for flooding.
- **Zone 4** corresponds to the area between the landward boundary of zone 3 and the estimated 0.2 percent flood zone for 2050, with 1.48 feet of sea level rise. This zone has a 1 in 500 annual chance of flooding from a coastal storm event. This area is at a relatively low risk for flooding.

By establishing a coastal overlay zone that accounts for the four sub-zones described above, communities can define what level of risk they are willing to tolerate by determining which set of implementation options should be applied in which zone<sup>6</sup>. The language below is intended to provide a model for the adoption of overlay zones by Tuckerton or Little Egg Harbor. This model coastal overlay zone includes examples of the restrictions that could be imposed within each overlay zone. These should be modified based on the objectives of the community. ***The model language below is not intended to be adopted as written but should be reviewed and modified as needed by municipal staff and attorneys to ensure that provisions are consistent with the provisions and intent of the overall zoning ordinance and the municipal Master Plan.***

#### a. Model Ordinance to Create Overlay Zone Ordinance:

##### 1) Definitions

1. **Green Infrastructure:** stormwater management practices that use or mimic the natural water cycle, rather than pipes and storm sewers, to manage rain, stormwater and snowmelt, and manage coastal flooding and storm surge.
2. **Nature-based protection:** strategies that mimic the risk reduction functions of natural systems but are created by humans (e.g., living shorelines, engineered dunes).
3. **Repetitive Loss (RL):** an NFIP-insured structure that has had at least two paid flood losses of more than \$1,000 each in any 10-year period since 1978.<sup>7</sup>
4. **Water-dependent uses:** uses that cannot physically function without access to the water body along which they are proposed.<sup>8</sup>
5. **Water-oriented uses:** development that serves the general public and derives economic benefit from direct access to the waterbody along which they are proposed.

##### 2) Purpose

1. To ensure that the development, preservation or use of the land and water resources of the coastal area is undertaken in a manner consistent with the capability of the land and water resources to support such development, preservation or use without adversely affecting the natural environment;

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<sup>6</sup> Descriptions of an extensive set of implementation options was included in Appendix 1 of the 2017 S&RCC Report

<sup>7</sup> See <https://www.fema.gov/national-flood-insurance-program/definitions#A>

<sup>8</sup> Source: CAFRA Rules, 7:7-1.5 Definitions

2. To preserve and enhance coastal resources;
3. To give high priority and preference to uses and facilities that are dependent upon proximity to the water or the lands immediately adjacent to marine and tidal waters;
4. To limit the use of immediate shorefront properties to water-dependent or water-oriented activities;
5. To limit the potential impact of storm surge, coastal flooding, permanent inundation, and erosion on coastal development in order to minimize damage to and destruction of life and property and to reduce the necessity for public expenditure to protect future development from such hazards;
6. To encourage physical and visual public access to the state's tidal waters and adjacent shorelines;
7. To encourage fishing and recreational boating harbor space, and the related uses and facilities that support those activities.

### 3) Boundary

The area subject to these regulations shall include all portions of the municipality within the coastal overlay zone, as delineated on a Zoning Districts Map on file in the Zoning and Code Enforcement Department and the township clerk. Uses and dimensional requirements applicable to lots and buildings permitted in accordance with the base zoning district (underlying zoning) and/or the township's Flood Hazard Area provisions shall be subject to the additional standards of the coastal overlay zone(s).

The boundaries of the coastal overlay zones shall be determined by adding the best available, science-based sea-level rise projections for 2050 (central estimate) to the best available and most current flood zone extents shown in the Federal Emergency Management Administration's applicable Flood Hazard Maps and Flood Insurance Rate Maps for Ocean County, New Jersey.

The coastal overlay zone encompasses the following:

**Zone 1** - Conservation Zone 1, encompassing all land seaward of the MHHW line in 2050.

**Objective:** Enhance natural protection and preserve natural corridors to allow for the upland migration of ecosystems. Gradually shift/reduce existing development and discourage new growth where armoring is not feasible due to hydrological, geological, economic, or ecological constraints. Zone boundaries encompass areas that provide the greatest natural protection or have non-critical structures at the greatest risk of extensive damage.

1. Preserve and restore important ecosystems (e.g. marshes and wetlands) to enhance important flood buffers or habitat.
2. Permit only water-dependent or water-oriented, agricultural, recreational or open space uses and activities as new uses.
3. Acquisition and conservation programs shall give priority to acquiring properties that have experienced repetitive loss from flood inundation and storm damage.
4. Restrict rebuilding of a repetitive-loss property to those homes or structures that were owned and occupied prior to the date of adoption of the coastal overlay zone.
5. Require all new buildings and buildings deemed to be substantially damaged to be elevated to three feet or more above the BFE.

6. Construction of infrastructure and facilities that are deemed critical to the community's public health, safety, and welfare and essential to its orderly functioning shall be prohibited.

**Zone 2** - Conservation Zone 2, encompassing all land within the FEMA 10 percent flood zone in 2050, but landward of MHHW line.

**Objective:** Enhance natural protection, manage, and reduce new growth incompatible with flood hazards, and reduce the potential for property damage sustained from coastal storms and flood inundation.

1. To preserve coastal features that provide natural flood and erosion protections, such as dunes and wetlands, where lot size is sufficient, landowners shall be required to construct new structures, and encouraged to relocate existing structures, to a setback that shall be based on the erosion rate for the area multiplied by the projected life of the structure<sup>9</sup>. In the case of a lot where the location of the calculated setback line and the property line does not allow sufficient area for the minimum permitted building envelope, the building shall be set back as far as possible from the water line as feasible.
2. Shoreline armoring constructed after the date of adoption of this overlay zone shall be limited to nature-based and hybrid solutions. Repair of existing shoreline armoring that does not exceed fifty percent of the total value of the structure shall not be subject to this requirement, except where the cumulative costs of all repairs over a 10-year period equals or exceeds 50 percent of the total structural value. Replacement of shoreline armoring shall meet new height requirements to provide flood protection and reduce overtopping.
3. Acquisition and conservation programs shall give priority to acquiring properties that have experienced repetitive loss from flood inundation and storm damage.
4. Rebuilding a repetitive-loss property shall be restricted to those homes or structures that were owned and occupied prior to the date of adoption of the coastal overlay zone.
5. Any new structures shall be set back as far landward or upland on the lot as practicable, in a manner that maximizes protection from coastal hazards, flooding, and shoreline erosion, as determined by the township's code enforcement department.
6. Structures shall be designed or retrofitted to meet the most up to date floodplain construction requirements as of the date of the building permit application.
7. All new buildings and buildings deemed to be substantially damaged, if reconstructed, shall have their first habitable floor elevated to three feet or more above the BFE.
8. The siting and/or construction of infrastructure and/or municipal facilities that are deemed critical to the community's public health, safety, and welfare and essential to its orderly functioning, shall be prohibited.

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<sup>9</sup> *Setback calculation example:* Little Egg Harbor area average erosion rate = 0.5 meters/year (Source: Shoreline Strategic Plan, Borough of Tuckerton and Township of Little Egg Harbor, Ocean County, December 2016); typical life span of a residential structure = 100 years. Setback =  $100 \times .5 = 50$  meters or 164 feet landward of 2050 MHHW line.

**Zone 3** - Accommodation Zone, encompassing all land within the FEMA 1 percent flood zone in 2050, not included in Zones 1 and 2.

**Objective:** Manage growth and reduce the potential for property damage sustained from coastal storms.

1. New development shall be limited to the density and intensity of development in existence on the date of adoption of the coastal overlay zone.
2. New structures shall be designed to meet the most current floodplain construction requirements as of the date of the building permit application. Owners are encouraged to retrofit existing structures to meet the most current floodplain construction requirements as of the date of the building permit application.
3. To preserve coastal features that provide natural flood and erosion protections, such as dunes and wetlands, landowners shall be required to construct new structures, and encouraged to relocate existing structures, to a setback that shall be based on the erosion rate for the area, provided by the township, multiplied by the projected life of the proposed structure. In cases where the lot area landward of the calculated setback is insufficient to allow for a typical building envelope, the new structure shall be located as far landward of the water line as feasible.
4. The siting and/or construction of infrastructure and/or municipal facilities that are deemed critical to the community's public health, safety, and welfare and essential to its orderly functioning shall be prohibited.

**Zone 4** - Protection Zone, encompassing all land within the FEMA 0.2 percent flood zone in 2050, not included in Zones 1 through 3 above.

**Objective:** Manage growth and ensure that new development is resistant to flood impacts. Limit public investment and critical infrastructure in areas that may have increased flood risk in the future.

1. Public investments shall be limited to infrastructure and facilities that must be located in close proximity, such as fire stations, in order to ensure immediate access. Such infrastructure or facilities shall be constructed to meet current floodplain construction standards.
2. New structures shall be designed to meet the most current floodplain construction requirements as of the date of the building permit application.
3. To provide flood protection and erosion control, existing hard coastal armoring shall be maintained, new hard armoring shall be permitted. However, natural erosion control and flood protection solutions (nature-based/green infrastructure approaches) shall be preferred and employed wherever feasible.

#### **4) Coastal Site Plan Review, Approval, and Exemptions**

A. Coastal site plan review and approval by the Planning Board and, as applicable, by the Zoning Board of Adjustment shall be required for all projects and activities fully or partially within the coastal overlay zone. Review shall be required for, but not limited to, all applications for building permits, subdivisions, rezoning, variances, and municipal improvements. The following activities may be exempt from coastal site plan review:

1. Minor additions to, or minor modifications of, existing buildings or detached accessory buildings that do not increase the occupancy of a structure.
2. Construction of new or modification of walks, decks, patios, driveways, swimming pools, tennis courts, and detached accessory buildings or other structures incidental to the enjoyment and maintenance of individual residential lots, excluding construction of shoreline armoring.
3. Construction of new or modification of existing on-premise structures including fences, walls, pedestrian walks and other impervious surfaces, underground utility connections, essential electric, gas, telephone, water and sewer service lines, signs that do not alter the natural character of the resource or restrict access along the public beach.
4. Activities conducted for the specific purpose of conserving or preserving soil, vegetation, water, fish, shellfish, wildlife, and other coastal land and water resources.

#### B. Administrative Review

1. All activities described in paragraphs 1 through 4 above shall be subject to an administrative review by the zoning officer prior to the issuance of a building permit in order to determine if the project is exempted from a coastal site plan review and approval by the Planning Board and/or the Zoning Board of Adjustment. An activity deemed not be exempt shall require a formal review by the Planning Board. An activity determined to be consistent with all of the aforementioned standards shall be exempt from coastal site plan review requirements.
2. An affidavit certifying that all abutting property owners have been notified about the application as provided in N.J.S.A 40:55 D-12 shall be submitted with any application for administrative review.

#### 5) Process

For **Little Egg Harbor Township**, in addition to the requirements as specified in Articles IX through XI of the Chapter 15, the township's land use and development regulations, and, as applicable, Chapter 185 the township's Flood Hazard Areas provisions, a coastal site plan shall include the following information:

For **Tuckerton Borough**, in addition to the requirements as specified in Chapter 220, the borough's site plan review requirements; Chapter 231, or the borough's subdivision ordinance; or, as applicable, Chapter 166, the borough's flood management provisions, a coastal site plan shall include the following information:

1. A plan showing the location and proximity of coastal resources (e.g. scenic resources and/or special areas described in the CAFRA rules) on and within 1,000 feet, in any direction, of the site.
2. A plan that depicts the topography of the site, flood elevations, erosion-rates and the location of the erosion-based setback, and the structure's dimension in relation to the setback.
3. A description of the entire project with appropriate plans, indicating project location, design, timing, and methods of construction.
4. An assessment of the capability of the existing natural and built resources to accommodate the proposed use.
5. A description of why the project is suitable for the proposed site.
6. An evaluation of the potential beneficial and adverse impacts of the project upon coastal resources. If the project could result in adverse impacts, a description of the methods that will be used to mitigate such adverse effects.

## 6) Review Criteria

For **Little Egg Harbor Township**, in considering any application for a permit to develop in the coastal overlay zone, the Planning Board shall consider all technical evaluations, all relevant factors, all standards specified in other sections of Chapter 15, the township's land use and development regulations, and:

For **Tuckerton Borough**, in reviewing any application for a permit to develop in the coastal overlay zone, the Planning Board shall consider all technical evaluations, all relevant factors, all standards specified in other sections of Chapter 255, the Borough's Zoning regulations, and:

1. The danger that materials on or stored on the project site may be swept by floodwaters onto other lands to the injury of others;
2. The danger to life and property due to flooding or erosion damage at the project site, and the safety of access to the project site in times of flood for emergency vehicles and emergency service providers;
3. The susceptibility of the proposed facility and its contents to flood damage, based on the BFE and site topography, and the effect of such damage on the individual owner;
4. The importance of the services provided by the proposed facility to the community;
5. The necessity for the facility to have a waterfront location;
6. The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
7. The compatibility of the proposed use with existing and anticipated development, and the relationship of the proposed use to the township master plan and Flood Hazard Areas provisions;
8. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site in consideration of projected sea level rise over the life of the structure;
9. The costs of providing governmental services to the project site after development during and after flood events, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, and streets and bridges; and
10. The use of mitigation measures to protect against flood damage on site and protection against flood impacts to adjoining properties, taking into consideration current conditions and the potential for future sea level rise.

### Zoning Ordinance Revision

Provisions for the coastal overlay zone could be inserted as §15-4.25 of Article IV, Zoning Districts, of Chapter 15, Land Use and Development of the Little Egg Harbor zoning regulations. This insertion would require re-numbering all of the Pinelands Area Zones sections starting with PA Preservation Area Zone. The provisions of the coastal overlay zone could be inserted as new §255-20 of Article II, Zoning Districts, of Chapter 255, of the Tuckerton Borough's Zoning regulations. This insertion would require re-numbering all subsequent sections starting with the Purpose of standards provisions of Article IV, Conditional Uses.

## 6. Implementation Options for Little Egg Harbor and Tuckerton

The 2017 S&RCC report identified a variety of strategies that municipalities can consider to reshape existing and future development patterns to reduce risks from sea level rise, erosion, and coastal storms. The options, many of which are presently employed in municipalities and states outside of New Jersey, are specifically intended to restrict development, minimize exposure, and protect critical environmental resources in high-risk areas. These options fall into six general categories:

1. **Hazard disclosure**
  - Disclosure requirements (current and future hazards)
2. **Allowance for marsh migration**
  - Limit shoreline armoring
  - Rolling easements
3. **More stringent and/or resilient codes**
  - Establish or increase freeboard requirements
  - Adjust building setbacks
  - Restrict rebuilding
  - Evaluate all permitted uses
  - Resilient design guidelines
  - Modify substantial damage/improvement thresholds and calculations
4. **Building restrictions**
  - Limit building size/density
  - Targeted acquisitions
  - Limit public infrastructure investment
5. **Redistributing development**
  - Acquisition of development rights
  - Transfer of development
6. **Realigning capital investment priorities**
  - Capital improvement programs
  - Special tax districts

The implementation strategies – their purpose, advantages, and limitations, where they’re presently being used, how they can be applied in New Jersey, and web links for additional information about each – are presented in Appendix 1 of the 2017 S&RCC report, which can be accessed via this link: <http://www.njfuture.org/wp-content/uploads/2017/12/New-Jersey-Future-Resilient-Coastal-Communities-Project-Report-2017.pdf>. These options were presented to the steering committee members in each municipality and during public meetings in Little Egg Harbor and Tuckerton, as part of the planning process. As previously mentioned, feedback received from the steering committees and the public was used to zero in on those options most relevant to these towns and most likely to be accepted by the residents in the short-term. The options selected for further research and demonstration of applicability are:

- Hazard Disclosure: Disclosure Requirements
- Allowance for Marsh Migration: Limit Shoreline Armoring
- More Stringent and/or Resilient Codes
  - Adjust Building Setbacks
  - Restrict Rebuilding
  - Modify Substantial Damage/Improvement Thresholds and Calculations

- Building Restrictions: Limiting Building Size/Density

In addition to the options listed above that were included in the 2017 S&RCC report, flood map adoption with a local design elevation exceeding FEMA's flood maps, a requirement for emergency access, and the designation of a redevelopment area were also explored.

It is important to emphasize that some of the proposed implementation options, such as more stringent or resilient codes or adjusting building setbacks, cannot be enacted currently through local regulation because of potential conflicts with limitations established by New Jersey's Residential Site Improvement Standards. However, several options, such as hazard disclosure requirements or modifying substantial damage thresholds, will require coordination with or guidance and support from various state or federal agencies. It will be necessary to coordinate options that are perceived to impede or in any way limit private property rights, such as prohibitions on rebuilding in areas at risk, with strategies that could offer offsetting compensation, such as development rights transfers and/or buyouts, to avoid being seen as "takings." Implementation options, such as those that are explored more in depth here, can be considered for inclusion in the coastal overlay zone, as described in the preceding section.

### a. Flood Map Adoption Exceeding FEMA's Flood Maps

#### ***Definition***

The National Flood Insurance Program (NFIP) is a federal program through which property owners in participating communities can purchase insurance to protect against flood losses in areas where state and community floodplain management regulations that reduce future flood damages have been established.<sup>10</sup> Participating communities are required to adopt floodplain management regulations that meet or exceed the minimum requirements of the NFIP, which includes adoption of the flood insurance rate map (FIRM) that identifies existing flood hazards. While federal insurance rates are based on the most current FIRM, communities can choose to adopt maps that take a more conservative approach, for instance basing flood zones on projected (future) risks instead of current-day flood risks. This results in setting local flood protection zones to a larger area, thus providing wider-ranging flood protection.

#### ***Application***

As members of the NFIP, Little Egg Harbor Township and Tuckerton Borough are required to review their flood management ordinance periodically and adopt new FIRMs if new data becomes available from FEMA. However, local governments do have authority to exceed FEMA requirements and use the best available data for planning and regulatory purposes. Communities looking to regulate in areas that differ from the FEMA established boundaries can do so by establishing a coastal overlay zone, as described in **Section 5** of this report. The first step in implementing a coastal overlay zone is codifying zones that represent coastal hazard risks.

A decision to adopt different mapping or data will not affect the rates for flood insurance premiums, since they are based on the current effective FIRM. However, since more restrictive approaches provide increased flood protection, the Community Rating System (CRS) program, which provides flood insurance discounts based on measures participating communities may take to augment protection, does award credit if a community's flood map is grounded on future conditions, including sea level rise. The [2017 CRS Coordinator's Manual](#) requires communities use the intermediate-high 2100 projections from NOAA or a dataset with equivalent projections to obtain credit under the CRS.

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<sup>10</sup> FEMA. "[Adoption of Flood Insurance Rate Maps by Participating Communities.](#)" FEMA 495, September 2012.

### **Examples**

Many communities have adopted local floodplain requirements that are more restrictive than current FEMA FIRM guidelines. The requirements adopted by [Columbus and Bartholomew County](#) in Indiana are examples of such elevated standards.

### **Recommendations**

Communities should adopt a flood map that is more protective than the FEMA FIRM to enhance resiliency. Recommendations from the 2017 S&RCC report, echoed in the discussion of coastal overlay zones above, call for adopting a map consistent with the 2050 projections of 1.48 feet of sea level rise. However, the 2017 Community Rating System (CRS) Coordinators manual only awards credit to communities that adopt a flood map based on the intermediate-high 2100 projections from the NOAA or equivalent data<sup>11</sup>. To gain CRS credit, Little Egg Harbor and Tuckerton should consider using the 2100 flood maps, which would alter the 2050 coastal overlay boundaries reflected in the S&RCC report. The proposed ordinance provisions outlined above in Section 5 would remain applicable, but the maps would need to reflect the slightly different 2100 projections. This would ensure more protective regulations that also provide CRS credit.

## **b. Hazard Disclosure: Disclosure Requirements**

### **Definition**

A method to inform current and future landowners of the existing and future risk to property from natural hazards would benefit individual homeowners and the municipality significantly. Disclosure and outreach would allow all property owners the opportunity to make informed, individual decisions regarding mitigation and risk reduction strategies. Greater availability of timely information will result in a population that is most willing and able to respond to the impacts of natural hazards, such as flooding. As was seen post- Sandy, there is a significant public cost to the decisions of individual property owners affected by flood hazards. The term *caveat emptor*, generally translated to mean “let the buyer beware” is a driving principle behind real estate transactions in the United States. It underscores a belief that it is the buyer’s responsibility to do all necessary research about a home and the neighborhood before purchasing a property, including learning about any off-site conditions that may affect the property. This reliance on individual responsibility to determine, evaluate, and mitigate risk ignores the reality that municipalities bear some of the costs of these decisions.

New Jersey’s Disclosure Act, N.J.S.A. 46:3C-1 to -12<sup>12</sup> requires sellers to disclose any and all latent defects relating to the condition of the property. The term latent generally covers conditions that are not observable from physical inspection. If a seller fails to disclose a defect, such as water damage, and they were aware of its presence, they can be held liable.

### **Application**

Under New Jersey’s Consumer Fraud Law, real estate agents are responsible for disclosure and they can be held liable for any defect they were aware of that was not properly disclosed. To protect their clients and the transaction, most New Jersey real estate agents ask sellers to complete a [Seller Disclosure Form](#). The standard New Jersey Seller Disclosure Form is not legally required, but widely used. It includes information about whether the property is known to be in a flood zone or has a history of flooding/drainage problems. It does not indicate whether the property is vulnerable to other hazards such as storm surge, subsidence, or erosion. It also does not cover any future risks associated with sea-level rise or climate change. The disclosure form protects the agent and the seller by documenting all

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<sup>11</sup> This standard was adopted after the mapping and analysis for the S&RCC project had been completed.

<sup>12</sup> The Disclosure Act was enacted in response to a New Jersey Supreme Court decision known as [Strawn v. Canuso](#), 140 N.J. 43 (1995)

information that is known; therefore, the buyer would have to demonstrate that a defect was known and not disclosed in order to win any claim against the seller or agent.

### Examples

California, Washington, and Oregon are among the states that require sellers to disclose whether the property is within a designated hazard area. South Carolina requires disclosure with respect to beachfront erosion in coastal areas, which is a dynamic risk area determined by historic erosion rates. Although no state presently has adopted disclosure requirements for sea-level rise, individual communities in Florida, Maryland, and Delaware are considering adopting such requirements.

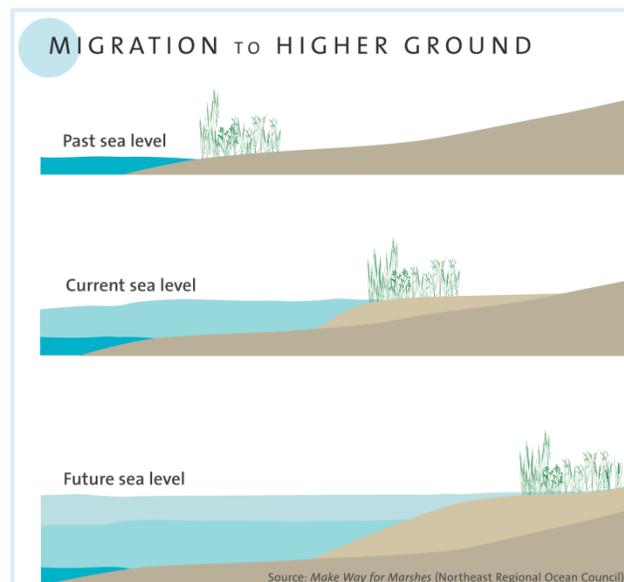
### Recommendations

The 2017 S&RCC report defined hazard disclosure as educating potential property owners about previous flood events; the property's proximity to flood-related hazard zones; and the potential to experience future hazards, including sea-level rise and future storm events. The report recommended that as part of their adaptation plans, municipalities adopt disclosure policies that require provision of information regarding hazards to potential buyers prior to the point of sale as part of their local adaptation plan. However, more recent research suggests that a local disclosure ordinance may be a departure from existing precedents and that as an alternative; municipalities may want to consider efforts that focus on education and outreach. Municipalities should also advocate that the state implement hazard disclosure laws, so they are enacted regionally. This avoids a major concern of town officials and realtors – that lack of consistency in disclosure requirements across municipalities might result in placing real estate at a competitive disadvantage in those communities with stricter disclosure requirements.

## c. Limit Shoreline Armoring to Enable Marsh Migration:

### Definition

Shoreline armoring is the construction of hard surfaces along the waterfront - such as bulkheads, retaining walls, or rip-rap<sup>13</sup> - to prevent erosion or inundation. Such structures, which have a limited lifespan, prevent natural marsh migration. For more information on marsh migration, see: <http://www.nj.gov/dep/cmp/images/coastal-atlas/marsh.jpg> . Construction or replacement of hardened shoreline structures may not be appropriate, particularly in conservation areas where it might be preferable to encourage marsh migration to enhance nature based shoreline protection or in areas that will be overtopped consistently by tidal flooding within the life cycle of the structure. Municipalities can limit installation of bulkheads in favor of living shorelines, which refer to engineered shoreline management practices that use vegetation or other organic material to minimize habitat loss and erosion in the littoral zone, and offer an alternative to “hard” engineering techniques. Living shorelines can be used along both developed and undeveloped areas and are considered to be more resilient than other engineered shoreline stabilization



<sup>13</sup> rock or other material used to armor shorelines, streambeds, bridge abutments, pilings and other shoreline structures against scour and water or ice erosion.

methods, such as bulkheads, because their design is more flexible and responsive to local conditions and therefore less likely to be undermined during a storm event. For more information on living shorelines, see: <http://www.nj.gov/dep/oclu/ls/index.html> .

### ***Application***

According to the Little Egg Harbor Township and Tuckerton Borough Shoreline Assessment, included as Appendix 3 of the 2017 S&RCC report, approximately 19 percent of the shoreline along Tuckerton and Little Egg Harbor, including the salt marsh complexes, has been armored with bulkheads. The vast majority of this armoring was constructed to protect lawful development from being undermined by erosion. However, bulkheads have a shorter life span than the development they protect, and they generally are not designed to protect parcels from other coastal hazards such as storm surge or sea level rise. Although numerous bulkheads appear to have been replaced within the last 10 years, there are also a number that are failing and potentially vulnerable. In addition, some bulkheads, including those that protect main thoroughfares through both municipalities, have failed and have not yet been replaced, leaving these stretches of road vulnerable to future erosion.

Like all structural protection measures, local shoreline stabilization techniques need to evolve to address changing coastal conditions and to reflect updated best practices. Although municipalities generally defer to the state for regulation of bulkheads and shoreline stabilization measures, local officials do have some authority to prioritize living shoreline approaches in some situations and to aid the state in protecting the stability of the shoreline.

Currently, CAFRA rules permit the reconstruction of a legally existing bulkhead subject to certain stipulations. These stipulations, such as using clean fill for backfill and ensuring the structure does not affect upland wetlands adversely, focus on ensuring the bulkhead does not pose an ecological threat to the surrounding environment. This is a critical function of the regulation, but it does not address the fact that many existing bulkheads have been under-designed to withstand the forces of current coastal storms and increasing threat from wave action. The regulation also does not address the fact that a bulkhead upland of wetlands may present a barrier to marsh migration, which is not likely a key issue within Little Egg Harbor or Tuckerton but may be a concern in other coastal towns.

### ***Examples***

Maryland passed legislation that requires applicants to file for an exemption if a shoreline protection project is needed and a living shoreline is not being designed for the site. Shoreline protection projects must use living shoreline techniques in lieu of hardened armoring unless a waiver is granted by the state. This process imposes a higher standard of review that would help ensure that nature-based alternatives for shoreline protection are the consideration before relying on hard armoring. In New Jersey, Brigantine has passed an ordinance which requires greater height for replacement bulkheads and encourages, where applicable, the use of living shorelines.

### ***Recommendations***

Living shoreline techniques should be the default option in coastal areas that will experience frequent flooding but need shoreline stabilization to minimize erosion of critical resources or to reduce the vulnerability of existing structures. Requests for reconstruction of bulkheads should be examined to determine whether a living shoreline could meet the objective of an armored structure. In areas deemed appropriate for conservation, limiting in-kind replacement of hardened shoreline structures should be coupled with rolling easements with added setback requirements where practicable.

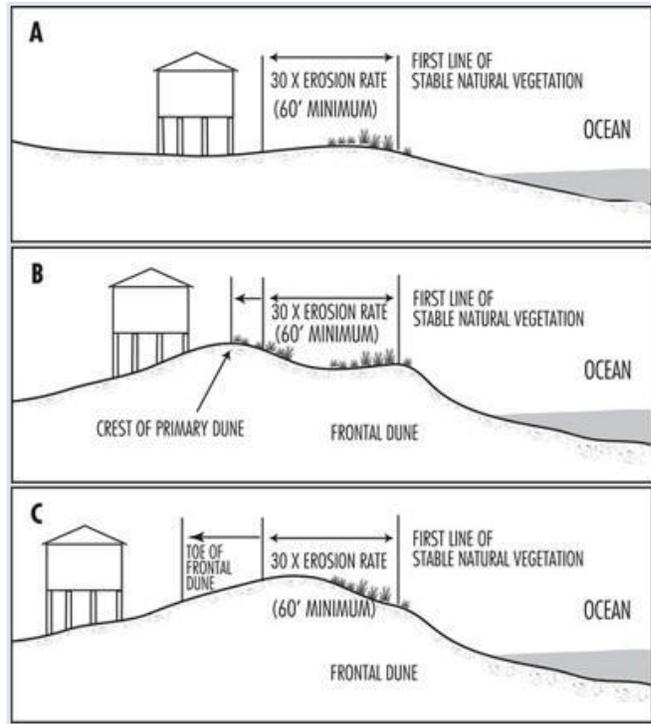
The project team recommends that Little Egg Harbor and Tuckerton Borough require applicants to evaluate the efficacy of a living shoreline approach prior to seeking a permit to install any sort of shoreline armoring. Where feasible, a living shoreline is the preferred method of stabilization. As more property owners conduct these studies, the town will begin to amass a body of research demonstrating the shoreline stabilization features that are most appropriate for local conditions.

#### d. More Stringent and/or Resilient Codes

##### 1) Adjust Building Setbacks

###### **Definition**

The most cost-effective long-term method of reducing risk to property is to minimize exposure by reducing proximity to an identified hazard. Setbacks on coastal properties serve two primary functions. Foremost, they reduce the risk to property by guaranteeing a minimum distance between the structure and the erodible shoreline, thus minimizing the potential damage from daily tidal erosion and/or erosion from storm events. Second, they minimize stress on resources, such as an unarmored shoreline or a wetland complex that separates development from open water. Runoff, soil compaction, and landscaping from developed properties can accelerate erosion along these natural features. Setbacks reduce these impacts. The CAFRA regulations establish minimum setback requirements within the CAFRA zone; however, municipalities are free to establish more restrictive setbacks without state approval.



Source: <https://deq.nc.gov/about/divisions/coastal-management/coastal-management-permit-guidance/development-areas-of-concern>

The marshes surrounding Little Egg Harbor Township and Tuckerton Borough play a critical role in protecting the towns from wave action and storm surge. In addition, they are an important part of the economy via ecotourism and commercial fishing, and they serve as vital habitat to many flora and fauna. Current projections of sea level rise indicate that without additional accretion, the marshes will be permanently inundated by 2050.<sup>14</sup> The New Jersey Department of Environmental Protection has been exceedingly cautious about permitting direct marsh restoration projects such as thin layer deposition to help marshes keep pace with sea-level rise. Allowing marshes to migrate landward - creating new marshland on what is now upland, is one of the few methods by which marshes can survive, as existing marsh is reduced by inundation and/or erosion.

###### **Application**

Although they are frequently implemented on oceanfront properties that are unarmored, setbacks can be used on both armored and unarmored parcels in developed areas. Traditionally, coastal setbacks designed for erosion are based on the distance the land is projected to erode during the duration of a 30-

<sup>14</sup> New Jersey Future, "Sustainable & Resilient Coastal Communities: A Comprehensive Coastal Hazard Mitigation Strategy." September 2017.

year mortgage, a 60-year mortgage, or the projected lifespan of the structure. The municipal ordinances for both towns contain definitions of 30-year and 60-year setbacks based on this concept. While these definitions were part of the model ordinance adopted by both towns, shoreline recession rates have not been calculated for either town. This not surprising given that the majority of developed waterfront is along armored edges. However, even where erosion risk is mitigated by a bulkhead or rip-rap, requiring distance between a structure and the water's edge, with positive drainage towards the water, can still protect it from erosion in the event these armaments fail. Currently, NJAC 7:7-4.2(5) allows for a permit-by-rule for single-family homes or duplexes under the stipulation that the building is set back a minimum of 15 feet from the waterward side of the bulkhead. Municipalities may increase this minimum setback via local ordinance, for lots deep enough to accommodate this type of setback.

### ***Examples***

North Carolina, Texas, Florida, and Maine are among the states that use setbacks and estimated coastal erosion rates to reduce vulnerable property and protect the shoreline.

### ***Recommendations***

Existing state rules and guidance on setbacks are insufficient to reduce the loss of coastal land expected to result from sea-level rise. While shoreline erosion is a concern throughout the state, the greater risk to Little Egg Harbor and Tuckerton, is that with sea-level rise the mean high high water (MHHW) line will cross the property boundary of many existing parcels, thus increasing the frequency of flooding on portions of these parcels. The project team recommends that the township and borough implement setbacks from the MHHW line using projections that allow for an appropriate design life of the structure, using a minimum of the 2050 MHHW line based on 1.48 feet of sea-level rise. Creating a setback based on this zoning scheme allows structures built within Coastal Overlay Zones 1 and 2 a greater buffer from the encroaching MHHW line and increases the likelihood that they will remain habitable for as long as possible given the existing lot sizes. A setback under this approach could be designed in a similar fashion to those of erosion setbacks based on recession rates. The setback for any property could correlate to allow for the occupancy of the structure for the duration of a 30-year, 60-year, or 100-year design life. Upon completion of this timeframe, new setback requirements would be applicable based on the best projections of sea level rise available at the time.

Under this approach any proposed structure in coastal overlay zones 1 and 2 in 2018 would be located landward of the projected MHHW, based on current estimates (using the recommended NOAA or equivalent data), for the duration of a 30-year mortgage cycle. This implementation option would likely not affect any properties at the time of adoption but would create the framework for future resilience if the MHHW continues to creep landward at the predicted pace.

## 2) Restrict Rebuilding

### **Definition**

The most effective mechanism for reducing flood damage is to ensure there are no structures in locations that are at risk of severe or repetitive flooding. Regulations that would restrict a property owner's ability to rebuild structures that were affected by flooding or other natural hazards such as wind damage could limit building size, height, location, and floor space. The long-term result would be fewer and smaller structures in vulnerable areas.



### **Application**

New Jersey has a wide flat coastal floodplain that has been developed extensively. As a result, any restrictions on rebuilding have the potential to affect large numbers of people and must be considered, designed, and discussed carefully. The benefit of these restrictions is that they would be applied over time and would result in a more resilient community as homes are repaired after being damaged during storm events. These restrictions are targeted toward ensuring that the size of the buildings that remain in the floodplain is limited, thus reducing the economic impact of future storms. Although CAFRA does allow perpetual rebuilding after a storm, fire, natural hazard, or an act of God, this does not prevent municipalities from disallowing or limiting the rebuilding of structures that have been substantially damaged. Careful consideration of appropriate restrictions are needed to avoid depriving a land owner of all economic value or use of the property to avoid the potential for claims of taking the lands without just compensation.

### **Examples**

South Carolina's Beachfront Management Act specifies that substantially damaged properties may only be replaced with structures of the original size and must be moved as far landward on the lot as possible.

### **Recommendations**

The municipal ordinance should include a provision prohibiting replacement of properties that are substantially damaged by a storm event within Coastal Zone 1. Municipalities should also consider the impact such a provision would have, were it to be expanded to include Coastal Zone 2. Prohibiting the replacement of properties would require compensation to the affected property owners and would affect the community's tax base<sup>15</sup>. Little Egg Harbor and Tuckerton should seek to develop partnerships with the state Blue Acres program to ensure that when these properties become substantially damaged, the state will be able to provide the funds necessary to purchase them. In addition, provisions limiting the rebuilding to the current building footprint, restricting the number of floors permitted, and lowering the allowable floor area ratio should be implemented for Coastal Overlay Zones 2 and 3.

## 3) Modify Substantial Damage/improvement Thresholds and Calculations

### **Definition**

The NFIP's substantial damage and substantial improvement rules are intended to bring older structures into compliance with current flood management standards over time. These rules mandate that a

<sup>15</sup> A detailed cost benefit analysis of buyout on a municipality's tax base is presented in Appendix D of the [Mystic Island Voluntary Buyout Health Impact Assessment](#), May 2016

structure that sustains damage that exceeds 50 percent of its market value are considered to be substantially damaged and must be rehabilitated to meet current building codes. However, since many flood losses do not reach this threshold, the cycle of flood-repair-flood remains unbroken except in the case of severe events. To increase the resilience of a community's building stock; municipalities can lower the substantial damage or substantial improvement threshold to less than 50 percent of a structure's pre-damage market value.

Another strategy to promote code compliance is for municipalities to implement cumulative accounting. In this practice, each improvement within a certain time period, usually 10 years, is counted cumulatively. When the addition of an improvement brings the cumulative total equal to or above the substantial-damage threshold, the structure is deemed substantially damaged or improved and is required to comply with modern building codes.

### ***Application***

When a community adopts a lower threshold or cumulative accounting, it accelerates the increased resiliency of its building stock by requiring older structures to come into compliance with current standards sooner than under the NFIP threshold. As an added advantage, a community that adopts either of these practices will gain points under the Community Rating System.

### ***Examples***

Costs to conform to current standards as a direct result of a decreased substantial damage requirement or a cumulative accounting practice would not be eligible for reimbursement with Increased Cost of Compliance funds from FEMA via the NFIP. Despite this, communities all across the country have implemented these requirements, including many in New Jersey. For example, the Borough of Longport in Atlantic County, Toms River Township in Ocean County, and the Borough of Pompton Lakes in Passaic County have implemented cumulative accounting measures.

### ***Recommendations***

The project team recommends that Little Egg Harbor and Tuckerton amend their local floodplain ordinances to codify the use of a lower substantial damage threshold in concert with cumulative accounting methods, thus requiring buildings to come into compliance with building codes when the damage threshold exceeds 40 percent of the pre-damage value within a 10-year period. The current Model Flood Damage Prevention Ordinances for New Jersey includes optional language for this standard.<sup>16</sup> The township and borough can refer to these models for specific language to use in modifying their floodplain ordinances. In addition, because substantial damage estimates are based on structure life and are not tied to the individual property owner, new provisions for cumulative accounting should be coupled with disclosure provisions that require informing potential purchasers of the existing damage estimates on record.

## **e. Building Restrictions: Limiting Building Size/Density**

### ***Definition***

Restricting the value of real estate by limiting the density and size of structures within high-risk areas would minimize the adverse economic impact of future storms. As stated previously, this can be accomplished over time by restricting rebuilding of damaged properties following flood events. Zoning can also be used to ensure that new structures are not placed in flood hazard areas.

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<sup>16</sup> See: <http://www.nj.gov/dep/floodcontrol/modelord.htm>

### ***Application***

Although the developable area within both communities is largely built out, it is important to ensure regulations that limit future densities match the community's vision for the future. Zoning could be used to limit future redevelopment or infill development opportunities to in-kind replacement or structures with smaller footprints, and to allow for lot consolidation where larger house sizes are desired. In the wake of Hurricane Sandy, ever-larger homes are being constructed along the waterfront. Municipalities have seen community character shift from affordable bungalows to oversized, single-family homes towering above their neighbors.<sup>17</sup> By setting bulk limitations in their zoning codes, towns can increase their resilience and ensure the codes preserve community character and reflect the future vision of the town. Towns should carefully weigh the competing priorities of expanding the tax base and the desire to maintain the community character, and ensure that the building restrictions will result in an economically sustainable community with the desired character.

Tuckerton's Strategic Recovery Planning Report (SRPR) indicated that approximately 30 percent of the tax base will be threatened by 1.48 feet of sea-level rise, the projected increase by 2050. In Little Egg Harbor this value is 8 percent. Small lots line the lagoons of both communities, which equates to a considerable percentage of the overall tax base at risk of flooding and during future storm events. By adjusting zoning, the towns can protect the viability of their tax base by encouraging greater development outside of flood-prone areas. As part of the scope of work within this project phase, the project team highlighted provisions of Little Egg Harbor's and Tuckerton's zoning codes and annotated them with comments about where and what changes could be made to enhance resilience.

### ***Examples***

Zoning restrictions are used regularly all over the country and elsewhere in New Jersey to maintain community character and direct growth to designated areas.

### ***Recommendations***

The project team recommends that Little Egg Harbor and Tuckerton reduce permitted densities in Coastal Overlay Zones 1 and 2. Specifically, the towns should maintain or increase setbacks and decrease FAR requirements to encourage homeowners who seek larger buildings to consolidate lots. This should only be implemented in areas the towns have targeted for larger homes. The towns should also consider other incentives for lot consolidation, such as waiving fees, increasing density, or FAR bonuses, or expedited project review. The towns could benefit from reviewing such incentives with the local development community. Although lot consolidation typically occurs in redevelopment areas in more urban locations, it is a legal and powerful mechanism to reduce flood risk in high-density waterfront areas.

## **f. Require Emergency Access**

### ***Definition***

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<sup>17</sup> See <https://www.nytimes.com/2017/06/16/realestate/hurricane-sandy-rebuilding-jersey-shore-towns.html>

Under the Flood Hazard Control Act rules (N.J.A.C 7:13-12.6), the DEP requires individual permits for private roadways and parking areas in designated flood hazard areas. The regulations stipulate that roadways and parking areas must be elevated at least one foot above the base flood elevation. The rule applies universally to public roadways, unless the applicant can demonstrate this is not feasible. The rule is also applicable to multi-unit residential properties that are not part of a redevelopment project. It does allow for exceptions in which applicants can demonstrate through analysis that meeting the regulation is not possible, but where a hardship waiver is granted a disclosure statement must be attached to the deed.



### ***Applications***

The regulation is appropriately comprehensive and does offer applicants an opportunity to seek waivers, and it is not difficult to understand why localities would defer to the state on this aspect of floodplain management. However, the towns should also recognize that this regulation only covers private roadways, not driveways. It requires commercial applicants and multi-unit complexes to consider egress, but the requirement does not apply to individual owners who rebuild slowly over time. In addition, this permit is triggered by the construction or reconstruction of a roadway, not resurfacing or repair or a roadway.

### ***Examples***

The Borough of Tuckerton currently elevates private driveways that front on road resurfaced or elevated to ensure access.

### ***Recommendations***

When roadways are inundated in the wake of storms, impeded emergency response and traffic disruption become local problems. Consequently, it is prudent for municipalities to require that as a condition of permit approval, applicants must provide an analysis showing that the road/driveway will be passable over time as sea levels rise, or an evaluation of how frequently it will be unpassable over time. If frequent inundation is anticipated that would obstruct access, the applicant should identify alternative emergency access options. This site plan review requirement should be included in Little Egg Harbor's and Tuckerton's coastal overlay zone provisions. As part of their permit applications, developers should be required to provide roadway elevations relative to projected sea levels and flood elevations over the life of the project, instead of using state standards (unless the state revises its infrastructure design requirements to reflect sea-level rise). If a town increases its freeboard requirements, it should also increase roadway elevation requirements to ensure that emergency access to proposed adjacent developments is preserved. At the same time that roads are elevated, driveway elevations should be increased to ensure uninterrupted access to homes.

## **g. Redevelopment area designation**

### ***Definition***

Under New Jersey's Local Redevelopment and Housing Law (40A:12A) a municipality has authority to designate an area in need of redevelopment. Once an area is so designated, a redevelopment agency has

wide latitude to clear, re-plan, develop, or redevelop residential, commercial, industrial, public, or other structures within the area as it may deem necessary in the interest of the general welfare. The redevelopment area plan supersedes the base zone, allowing various restrictions or permissions that would be prohibited in the absence of a redevelopment area designation.

### ***Applications***

Redevelopment area designation has limited applicability to the proposed coastal zones of Little Egg Harbor or Tuckerton since a prerequisite for its adoption is a determination as an area in need of redevelopment, in accordance with the Local Redevelopment and Housing Law. However, in the event of another major storm, or a major economic event, it is possible that flood-prone areas could qualify for this designation. Designating a redevelopment area within a coastal overlay zone, on top of the base zoning, would create conflicting and confusing requirements that may subvert resiliency intentions. However, in the absence of a coastal overlay zone, a redevelopment area plan could be used to set more restrictive requirements that would enhance flood protection measures and reduce risk.

### ***Examples***

Numerous communities in New Jersey have designated Redevelopment Areas<sup>18</sup> that overlap flood-prone property, however it is not known if any of these would also overlap with a Coastal Zone Overlay.

### ***Recommendations***

The authority granted to a municipality under the Redevelopment and Housing Law could present potential community health, safety, and welfare conflicts if that municipality attempts to promote redevelopment in areas that have or are expected to experience risk of flood inundation due to sea-level rise, particularly if flood conditions are the basis for the “in need of redevelopment” designation. The project team believes that it is important to acknowledge this potential for conflict. However, extensive analysis of this relationship will require a more thorough assessment that exceeds the scope of this project.

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<sup>18</sup> According to February 2018 data provided by the staff of the NJ Department of Community Affairs, 793 areas have been designated in need of redevelopment in 237 municipalities and 105 areas have been designated in need of rehabilitation in 54 municipalities. An analysis of the number of such areas that overlap floodplain areas has not been conducted for this report.

## 7. Zoning/Master Plan Analysis

### a. Background

The project team's scope of work included evaluating the existing municipal master plans and zoning codes for Little Egg Harbor Township and Tuckerton Borough in order to recommend changes that will explicitly consider the risks of coastal hazards and projected sea level rise, with the goal of achieving resilient community design (see **Appendix 2, redlined and annotated version of Little Egg Harbor Master Plan; Appendix 3 redlined and annotated version of Little Egg Harbor Zoning Ordinance; Appendix 4, redlined and annotated version of Tuckerton Borough's Master Plan; Appendix 5; redlined and annotated version of Tuckerton Borough's Zoning Ordinance**). By incorporating these changes, the master plans and zoning regulations of the two communities will serve as models for other New Jersey coastal communities, demonstrating how long-term growth and development policies should be shaped.

Changes to land use regulations often occur incrementally and achieving the objectives that such regulations seek typically takes several years, if not decades. Therefore, Little Egg Harbor and Tuckerton should prepare changes to their master plans and zoning codes as soon as feasible before the next precipitating event occurs. It is highly unlikely that immediately following a major storm event a community would want or be ready to engage the public in a master plan update and zoning amendment process that would be entailed in enacting new regulations, and by not preparing master plan and zoning code changes now, the communities would miss the opportunity to rebuild in a resilient manner as opposed to merely returning everything to its pre-storm state. Recognizing its opportunity, Little Egg Harbor Township has already taken steps to incorporate findings and recommendations of recent resiliency planning efforts into its 2015 Master Plan Re-Examination Report.

In home-rule states such as New Jersey, municipal officials are the primary arbiters of the form and intensity of development. Therefore, to address risks from future coastal storms and sea level rise, Little Egg Harbor Township and Tuckerton Borough will need to ensure that sea-level rise projections and adaptation and mitigation strategies are considered in local plans, land use and development decisions, and capital investments in local services and infrastructure.

### b. Master Plan

New Jersey's Municipal Land Use Law (MLUL) states that a municipal governing body shall provide for the reexamination of its master plan every 10 years. At this interval, a community could assess current sea level rise conditions to determine if changes in land use patterns are warranted.

In New Jersey, comprehensive planning is guided by the MLUL (N.J.S.A. 40:55D et seq.). The MLUL defines a "master plan" as a composite of one or more written or graphic proposals for the development of the municipality. A master plan should guide the use of lands within the municipality in a manner that protects public health and safety and promotes the general welfare.

The master plan must also contain a specific policy statement describing the relationship of the proposed development of the municipality, as outlined in the master plan, to (1) the master plans of contiguous municipalities, (2) the master plan of the county in which the municipality is located, and (3) the State Development and Redevelopment Plan adopted pursuant to the State Planning Act.

Beginning in 2017, New Jersey Future has been working with the Hazard Mitigation and Recovery Planning Committee of the New Jersey chapter of the American Planning Association to propose specific revisions to the MLUL that will require municipalities to incorporate risk and vulnerability analyses into local master

plans and associated land use controls, including zoning codes, stormwater management plans (NJSA 40:55-95), utility plans, capital improvement plans and official maps. This committee has been developing language to be added to the MLUL to foster alignment of municipal policies, codes, and programs with natural hazard information and mitigation strategies to ensure that municipalities are more resilient and less prone to environmental hazards such as sea level rise, extreme storms, and increased heavy precipitation events.

### 1) Little Egg Harbor Township Master Plan and Re-Examination Reports

Little Egg Harbor Township approved its last Comprehensive Master Plan in 1999 and completed re-examination reports in 2007 and 2015. The master plan describes existing land use and development, demographic, housing, environment, open space, circulation, community facilities, economic development and other conditions at the time of its adoption. Among the stated goals of the Little Egg Harbor Master Plan:

- Reduce permitted residential densities, where appropriate, consistent with planning efforts aimed at minimizing the fiscal impacts of new residential development;
- Concentrate new residential and commercial development in planned centers or other growth corridors where infrastructure is available and comprehensively planned; and
- Promote better coordination and consistency between State and Municipal planning efforts; and
- Promote land use policies and regulations that encourage economic development and redevelopment that improve the Township's property tax base.

The 2015 Master Plan Re-Examination report documents extensively the impact of Hurricane Sandy on Little Egg Harbor Township and incorporates the recommendations of the Strategic Recovery Planning Report.

### 2) Master Plan Recommendations:

The main purpose of the Township's master plan is to encourage development patterns that promote the health, safety and welfare of residents, which includes minimizing risks associated with known and anticipated hazards. The 2015 Master Plan Re-Examination report extensively documented the impact of Hurricane Sandy on Little Egg Harbor Township and has already incorporated the recommendations of the aforementioned Strategic Recovery Planning Report. To that end, the Sustainable and Resilient Coastal Communities project team re-affirms the Master Plan recommendations contained in the 2015 Master Plan Re-Examination Report and further suggests the following recommendations:

#### Vision Statement

- Municipal officials should engage the community in exercises to evaluate future development scenarios considering land use mix, intensity, and density that will serve as the framework for the Vision Statement in the Master Plan.
- An accompanying objectives statement should acknowledge projected flood risk exposure and outline mitigation objectives and principles.

#### Land Use Element

- The Land Use Element of the Little Egg Harbor Master Plan should identify and analyze, through a detailed, future-looking vulnerability and risk assessment, existing land use-related exposure to natural hazards as well as future threats related to rising sea levels, storms, shoreline erosion, flooding and storm surge. This will ensure that projected risk becomes an integral part of planning and will support the plan's goal of coordinating municipal and state planning efforts.

- The land use categories described in the Land Use Element should be revised consistent with the zoning code recommendations identified above. In particular, the permitted uses and use standards in all districts should be revised to reflect the known risk of coastal hazards.
- Little Egg Harbor should also add resilient design guidelines to the Land Use Element of its Master Plan. As suggested in the December 2017 Sustainable and Resilient Coastal Communities report, in advance of rebuilding, the borough could provide simple, accessible, guidance to homeowners and businesses about flood-resilient design that can help minimize future risk, particularly where structures are located below the BFE. New York City developed Climate Resiliency Design Guidelines, which could serve as a good resource, and are available at: [http://www1.nyc.gov/assets/orr/pdf/NYC\\_Climate\\_Resiliency\\_Design\\_Guidelines\\_v2-0.pdf](http://www1.nyc.gov/assets/orr/pdf/NYC_Climate_Resiliency_Design_Guidelines_v2-0.pdf)
- Little Egg Harbor should re-evaluate the areas described in the Master Plan as vacant developable lands to correspond with known flood zones. This will enable the township to identify growth redistribution opportunities.
- Little Egg Harbor should conduct an area-wide analysis when evaluating its current center to address all growth impacts (water quality, habitat loss, etc.).

#### **Community Facilities/Open Space**

- The Community Facilities/Open Space section and Community Facilities Plan Element identify existing community facilities, such as schools, libraries, police and fire stations, the senior center and other municipal buildings. Since this plan was written, the municipal building and police station have been relocated to Radio Road. The Community Facilities/Open Space section should be revised to do the following:
  - Address the current issue of raising critical infrastructure to elevations close to MHHW. Insufficient elevations have presented a serious hazard during past storm events;
  - Identify methods to upgrade, maintain, elevate and/or re-locate critical community facilities by developing a municipal capital improvement program, as suggested in the 2015 Master Plan Re-Examination report; and
  - Identify and address the vulnerability of sewer and water utilities to coastal storm events that could render the systems inoperable.

#### **Environmental Conditions**

- The Environmental Conditions section of the Little Egg Harbor Master Plan notes that extensive portions of the township are in flood-prone areas, subject to storm surges, high tides, stormwater runoff and inadequate drainage. It further states that it is important to identify flood-prone areas for planning purposes so that construction in these areas can be avoided or special restrictions can be attached to any approvals. Proper planning for flood-prone areas can reduce or eliminate flood related risk to people and their property.
- The Environmental Conditions section of the township's Master Plan should build upon its existing statement of risk due to flooding and other coastal hazards by identifying current efforts to address natural hazards and respond to risk, and consider gaps or overlaps between these current efforts and those that will be needed to address future conditions.
- The Environmental Conditions section should also delineate the four coastal overlay zones within current CAFRA areas by including up-to-date risk boundary maps in the Little Egg Harbor Master Plan.

#### **Circulation Plan**

The Circulation Plan of the Little Egg Harbor Master Plan should be revised to:

- Make recommendations for evacuation routes in case of flooding or coastal hazards, and
- Identify sections of road that are subject to flooding.

### 3) Tuckerton Borough Master Plan and Re-Examination Reports

Tuckerton's Master Plan (2002) and its Re-Examination report (2007) define the borough's land use patterns and activity. The Master Plan contains several elements, including Land Use, Economic Development, Center Designation, Housing, Conservation, and Wastewater. The Master Plan designates the Greater Tuckerton Town Center and supports the goal of the State Plan in revitalizing towns like Little Egg Harbor Township and Tuckerton Borough. The Master Plan vision describes "a 21st century Borough that is economically prosperous, environmentally sustainable, and socially stimulating." As noted above, other plans and studies have built upon the borough's Master Plan to guide future land uses to achieve a balance between the needs of current and future residents, economic development, and environmental conservation.

The following recommendations from the borough's 1999 Master Plan support directing development away from vulnerable coastal areas:

- Incorporate sustainable, environmentally-friendly and green design standards as appropriate into the Zoning and Land Use Ordinances as part of new development.
- Explore creating a borough greenway along Tuckerton Creek for flood protection, recreation, and open space. Identify key parcels for flood protection, recreation and open space. Identify key parcels for acquisition or establishment of easements.
- Identify key parcels for preservation as open space, such as along Route 539 corridor.
- Promote sustainable development through amendments to the zoning ordinance, including regulations for lot and building coverage, buffers and setbacks and increased landscaping.
- Incorporate sustainable storm water management practices into new design through the use of pervious surfaces, increased native landscape buffers and increased plantings.

#### Master Plan Recommendations

The overarching goal of a municipal master plan should be to promote development patterns that minimize risks associated with known and anticipated hazards, or not increase such risks. To that end, the Sustainable and Resilient Coastal Communities project team recommends the following action items be incorporated into the Tuckerton Borough Master Plan:

#### Vision Statement

- Municipal officials should work with the community to evaluate future land use mix, intensity, and density development scenarios that will inform the prospective Vision Statement of the Master Plan. To mitigate future flood hazard risks, consideration should be given to the feasibility of redistributing or creating shore-like amenities and eco-tourism within inland areas.
- Future Master Plan objectives statements should acknowledge projected flood risk exposure and outline mitigation goals, objectives, and guiding principles.

#### Center Designation

- The borough's Master Plan should re-evaluate the areas described as vacant developable lands in the Center Designation section to correspond with known flood zones. This will enable the borough to identify growth redistribution opportunities.

- The borough should conduct an area-wide analysis when evaluating its current center to address all growth impacts (water quality, habitat loss, etc.)

#### **Land Use Element**

- The Land Use Element of the borough’s Master Plan should identify and analyze (through a detailed, future-looking vulnerability and risk assessment) existing land use-related exposure to natural hazards as well as future threats related to rising sea levels, storms, shoreline erosion, flooding and storm surge as part of its “Issues and Recommendations” section. This will ensure that projected risk becomes an integral planning element.
- The land use categories described in the Land Use Element should be revised so that they are consistent with the zoning code recommendations identified above. In particular, the permitted uses and use standards under “Issues and Recommendations” in all districts should be revised to reflect the known risk of coastal hazards.
- The Land Use Element contains a section on design standards that pertains mostly to the preservation of community character. Tuckerton Borough should retain the center-based design guidelines, which promote best practices in smart growth, but revise the design standards to incorporate the appropriate implementation tools described in the Sustainable and Resilient Coastal Communities report. These include, for example:
  - increasing or establishing freeboard requirements,
  - adjusting building setbacks, and/or
  - limiting building size and density.
- Tuckerton could also add resilient design guidelines to the Land Use Element of its Master Plan. As suggested in the Sustainable and Resilient Coastal Communities report, in advance of rebuilding the borough could provide simple, accessible, guidance to homeowners and businesses about flood-resilient design that can help minimize future risk, particularly in areas where structures are located below the BFE.

#### **Community Facilities Plan Element**

- The Community Facilities Plan Element of the Tuckerton Borough Master Plan identifies existing community facilities, such as schools, parks, libraries and emergency stations, and evaluates future needs. The Community Facilities Plan should address the current issue of having critical infrastructure at elevations close to MHHW, which has presented a serious hazard during past storm events.
- Further, the Community Facilities Plan Element should:
  - require an inventory of all vulnerable municipally-owned buildings;
  - show relative flood risk for all facilities; and
  - identify methods to elevate or relocate critical community facilities through a municipal capital improvement program.

#### **Wastewater Management Element**

- The Issues and Recommendations section of the Wastewater Management Element of the Tuckerton Borough Master Plan should be revised to identify and address the following critical issues:
  - As noted in the Wastewater Facilities section, wastewater is collected by the borough’s municipal system, which connects to the Ocean County Utilities Authority system. However, according to the borough’s Strategic Recovery Plan, Hurricane Sandy knocked out power to the borough for up to 14 days, rendering the sewage system inoperable.

- Furthermore, the *Growing Smart and Water Wise* report discussed in the Water Quality section also found that drinking water, wastewater, and stormwater infrastructure requires better asset-management practices and a greater investment in upgrades and maintenance.

#### **Circulation Plan Element**

The Circulation Plan of the borough’s Master Plan should be revised to:

- make recommendations for evacuation routes in case of flooding or coastal hazards; and
- identify sections of roadway network that are subject to flooding.

#### **Conservation Plan Element**

- The Conservation Plan Element of the borough’s Master Plan notes that “extensive portions of the Borough lie within flood prone areas and are subject to flooding from storm surges, high tides, storm water runoff or other reasons.” This element further states that “flood prone areas not in preservation areas should be regulated to mitigate potential risks to people and property.”
- The Conservation Plan Element should build upon this statement of risk due to flooding and other coastal hazards by identifying current efforts to address natural hazards and respond to risk, and consider gaps or overlaps between these current efforts and those that will be needed to address future conditions.
- The Conservation Plan Element should also delineate the four coastal flood zones described in Section 5, above, within current CAFRA areas by including risk boundary maps
- Finally, the Conservation Plan Element should identify opportunities for installing green infrastructure and nature-based shoreline protection strategies.

#### **Utility Service Plan Element**

The borough should consider developing a Utility Service Plan element of the Master Plan. The existing MLUL requires that a utility service plan element analyze the need for and show the future general location of water supply and distribution facilities, drainage and flood control facilities, sewerage and waste treatment, solid waste disposal and provision for other related utilities, and including any stormwater management plan required pursuant to the provisions of Article 12, Storm Water Management Plan (P.L.1981, c.32 (C.40:55D-93 et al.)). However, in order to incorporate resiliency into the utility service plan, the borough should account for current and future risks associated with exposure to environmental hazards, such as flooding, in the location, design, and construction of existing and proposed facilities

#### **4) Relationship to Other Plans – Residential Site Improvement Standards (RSIS)**

If more stringent freeboard and flood resistant construction standards are implemented through the borough’s master plan, they should be discussed in the RSIS sub-section of this chapter.

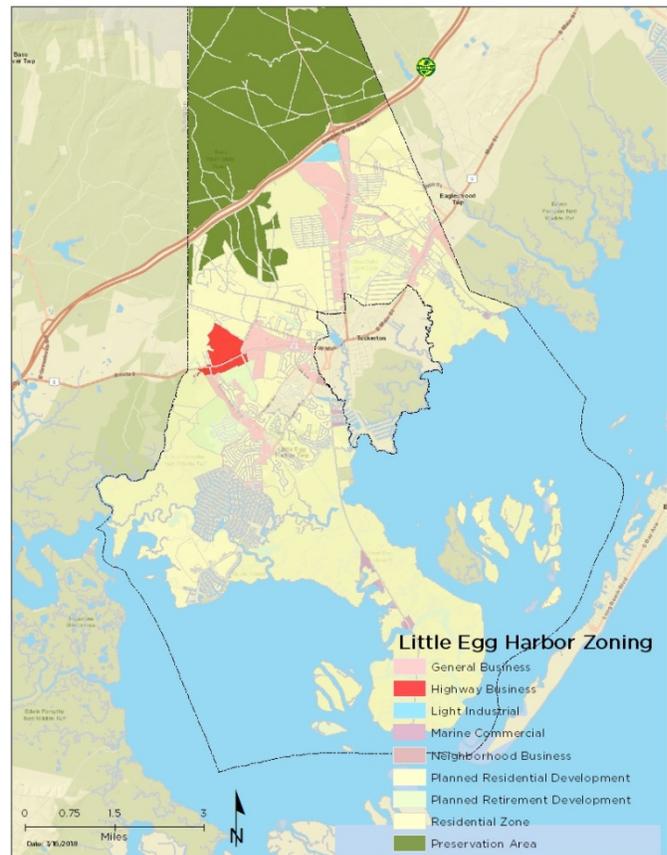
#### **c. Zoning Code**

Since the [\*Euclid v. Ambler\*](#) case of 1926, which established that land use controls were not an unreasonable intrusion on private property rights, municipalities have invoked the power of zoning to influence every element of their land use and community form. Zoning is arguably the most powerful mechanism municipal officials have at their disposal to shape growth. In addition to guiding development, local zoning controls can be applied effectively to prepare communities for the impacts of rising sea levels.

The MLUL (N.J.A.C. 40:55D-62) delegates to a governing body the authority to adopt or amend a zoning ordinance that regulates the uses of land and of buildings and structures thereon. A zoning ordinance can only be adopted after the planning board has adopted the land use plan element and the housing plan element of a master plan, and all the provisions of the zoning ordinance must be substantially consistent with the land use plan element and the housing plan element of the master plan.

A zoning ordinance can be used to discourage development in flood-prone areas. A 2013 report by the New Jersey Climate Adaptation Alliance<sup>19</sup> recommends that local planners use up-to-date flood mapping, in conjunction with climate change projections, to develop maps of areas with high flood risk, including coastal areas at risk from sea level rise, and riparian and low-lying inland areas likely to flood during heavy precipitation events. Planners should then use this information to consider imposing stricter regulations for new development in floodplains by zoning for very low density uses, transferring development rights, establishing minimum requirements for building construction, limiting a property owner’s ability to rebuild structures subject to repetitive flood losses, requiring large setbacks from shorelines and water bodies, and requiring owners to maintain riparian vegetation along waterways. These and other risk management tools are examined in further detail later in the report.

**Figure 3: Little Egg Harbor Zoning Map**



### 1) Little Egg Harbor Township Zoning Code

Little Egg Harbor Township adopted its Land Use and Development Ordinance in its current form in 2013. The purpose of the township’s Land Use and Development Ordinance is to “establish a pattern for the use of land and buildings based on the Land Use Element of the Master Plan and to effectuate the Master Plan as enacted in order to encourage municipal action to guide the appropriate development of land in a manner which will promote the public health, safety, morals and general welfare of the people.”

Little Egg Harbor has a mix of zoning districts, which are shown on the township’s official map (2007). These districts comprise various residential, commercial, and industrial zones plus four zones specific to lands within the Pinelands boundaries.

Some important purposes of the township’s zoning code include:

- regulating the bulk, height, number of stories and size of buildings and other structures;

<sup>19</sup> New Jersey Climate Adaptation Alliance. [“Climate Change Preparedness in New Jersey: Best Practices for Local Planners.”](#) December 2013. Rutgers University.

- establishing appropriate population densities and concentrations contributing to the well-being of persons, neighborhoods, communities and regions and preservation of the environment; and
- promoting the conservation of open space and valuable natural resources and prevent urban sprawl and degradation of the environment through improper use of land.

Each of the recommendations presented below supports one or more of these purposes of the Land Use and Development Ordinance.

### Zoning Code Recommendations

In order to realize the land use changes proposed in the Master Plan, Little Egg Harbor Township should make the following changes to its zoning code:

- Ensure service area restrictions are consistent with known risk of coastal hazards.
- The township should consider areas that may be at increased risk as sea levels rise and evaluate whether existing **permitted uses** will still be appropriate under various sea-level rise scenarios.
  - Land uses within the Conservation Zone and/or areas of greatest flood risk should be limited to recreation, open space, ecological restoration, and/or water-dependent uses, as defined by CAFRA (N.J.A.C. 7:7-1.5).
  - In other risk zones, uses should be evaluated in terms of whether occupancy poses a risk to public health and safety as sea levels rise. Certain uses present a greater challenge for emergency response and/or recovery, or a greater danger to the community if the structure is flooded.
- The township's Land Use and Development Ordinance contains a section on **floodplain regulations** (§15-11.10). The stated purpose of these regulations is "to discourage construction and regrading in flood hazard areas, to prevent encroachments into flood hazard areas which would obstruct or constrict the area through which water must pass and to prevent pollution of watercourses during low or high-water periods by preventing the placing or storing of unsanitary or dangerous substances in the flood hazard areas." These regulations should be evaluated to ensure that they not only allow the free flow of water but also protect property and human life.
- The township should ensure that the **flood hazard maps** used by the Planning Board engineer to determine properties in the floodplain are up to date and incorporate projected sea level rise conditions.
- Each of the zoning districts contains bulk standards, including area, yard and building requirements. The township should revise the **design standards** to incorporate the appropriate implementation tools described in the S&RCC Final Report. These include, for example,
  - establishing or increasing freeboard requirements,
  - adjusting building setbacks, or
  - limiting building size and density.
- In addition to the bulk standards, some districts, such as the Route 9 Gateway Overlay Zone, also contain detailed design standards that prescribe certain massing, height, materials and architectural embellishments. The township should add **resilient design guidelines** to the Land Use and

Development ordinance to mandate construction materials, foundation design, freeboard and setbacks that create a more resilient design.

- The township should, through the use of up-to-date flood maps, consider imposing **stricter regulations for new development** in floodplains. The Little Egg Harbor Township Land Use and Development Ordinance already contains four zones pertaining to land within the Pinelands, as well as a transfer-of-development rights (TDR) system called Pinelands Development Credits. The township can use this model to consider imposing stricter regulations for new development in floodplains by zoning for very low density uses, transferring development rights, establishing minimum requirements for building construction, limiting a property owner’s ability to rebuild structures subject to repetitive flood losses, requiring large setbacks from shorelines and water bodies, and requiring owners to maintain riparian vegetation along waterways.

## 2) Tuckerton Borough Zoning Code

The Borough of Tuckerton Zoning Code governs *where* and *how* land can be developed and used throughout the municipality, while the official map (2002) depicts the location of each zoning district. According to the official map, the Borough of Tuckerton is divided into 12 zoning districts.

There are presently approximately 80 acres of developable land in Tuckerton, of which a quarter is zoned residential and three-quarters are zoned commercial. There is no developable land zoned for industrial uses in the borough. Most of the available developable land is in the B2 Highway Business District; all other zoning categories combined have less than 10 acres of developable land available.

### Zoning Code Recommendations

In order to achieve the land use changes proposed in the Master Plan, Tuckerton Borough should make the following changes to its zoning code:

- **Ensure service area restrictions are consistent with known risk of coastal hazards.**
- **Evaluate all permitted Uses:** Tuckerton Borough should consider areas that may be at increased risk as sea levels rise and evaluate whether existing permitted uses will still be appropriate under various sea level rise scenarios.
  - Land uses within the Conservation Zone and/or areas of greatest flood risk should be limited to recreation, open space, ecological restoration, and/or water-dependent uses, as defined by CAFRA.

**Figure 4: Tuckerton Zoning Map**



- In other coastal overlay zones, uses should be evaluated in terms of whether occupancy poses a risk to public health and safety as sea levels rise. Certain uses present a greater challenge for emergency response and/or recovery, or a greater danger to the community if the structure is flooded.
- **Prohibit the future siting of the following development types in the floodplains** (the following is based on a HUD flood management checklist <sup>20</sup>)
  - Structures or facilities that produce, use or store highly volatile, toxic, or water-reactive materials.
  - Structures where essential and irreplaceable records are stored or from which utility or emergency services are provided that may become lost or inoperative during flood and storm events (e.g., data storage centers, generating plants, principal utility lines, emergency operations centers including fire and police stations, and roadways providing sole egress from flood-prone areas).
  - Structures or facilities that are likely to contain occupants who may not be sufficiently mobile to avoid loss of life or injury during flood or storm events; e.g., persons who reside in hospitals, nursing homes, convalescent homes, intermediate care facilities, board and care facilities, and retirement service centers. Housing for independent living for the elderly is not considered critical.
- **Mandate resilient design in all new development** or substantial redevelopment and incorporate flood-resilient design guidelines into the zoning code, particularly in areas of the borough where structures are located below the BFE. For example, the borough can mandate construction materials, foundation design, freeboard, and setbacks to create a more resilient design. This is consistent with the 2007 Master Plan Re-Examination report, which recommended that the borough “incorporate sustainable, environmentally friendly, and green design standards as appropriate, into the Zoning and Land Use Ordinances, and as part of new development.”
- Use up-to-date flood maps to **consider imposing stricter regulations for new development in floodplains** by zoning for very low density uses, transferring development rights, establishing minimum requirements for building construction, limiting a property owner’s ability to rebuild structures subject to repetitive flood losses, requiring large setbacks from shorelines and water bodies, and requiring owners to maintain riparian vegetation along waterways.

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<sup>20</sup> As guidance for avoiding adverse impacts associated with development in floodplains, the [United States Department of Housing and Urban Development](#) defines these uses as those for which even a slight chance of flooding would be too great.