BUILDING ECOLOGICAL SOLUTIONS TO COASTAL COMMUNITY HAZARDS (BESCCH)

Borough of Cape May Point

Municipal Coastal Vulnerability Assessment

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Final Report

Prepared for the Borough of Cape May Point
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Cape May Point Municipal Coastal Vulnerability Assessment Report

I. Introduction

Municipal Coastal Vulnerability Assessment

The Municipal Coastal Vulnerability Assessment (CVA) is both a process and tool to help communities make incisive and sound decisions on near and long-term coastal management, reconstruction, and resiliency measures. The CVA categorizes the degree to which a community's assets (e.g. built, natural, social, etc.) will be impacted by projected sea level rise and storm events, and analyzes the consequences those vulnerabilities pose to the community. By accounting for vulnerability and consequence factors associated with future flood events, local officials will be better informed to make long-term decisions about land use planning, mitigation, adaption measures, and public investments.

The CVA was developed by the New Jersey Resilient Coastal Communities Initiative (RCCI), a post-Sandy project funded by the National Oceanic and Atmospheric Administration (NOAA), and managed by the NJ Department of Environmental Protection's Office of Coastal and Land Use Planning. The tool was created in response to the need for municipalities to be better prepared for the increasing rate of sea level rise and extreme storm events.

II. Municipal Background

Location and Demographics

Cape May Point is located at the southern-most point of New Jersey within Cape May County and on the Cape May peninsula where the Delaware Bay meets the Atlantic Ocean. The borough encompasses 202 acres of land with over 2 miles of coastline along the Atlantic Ocean and Delaware Bay. Elevation ranges from 0 to 15 feet in this very flat topography. Expansive wetlands, ponds, beaches, dunes, and forest surround Cape May Point with Cape May State Park and Cape May Meadows Nature Preserve to the east and Higbee Wildlife Management Area (WMA) to the north. In addition, Lake Lily, a 16 acre freshwater lake, covers much of the northeastern section of town. The separation of Cape May Peninsula from the rest of New Jersey by the Cape May Canal has created an isolated rural character in Cape May Point and the surrounding area.

Cape May Point has a year-round population of 291 residents according to the 2010 census, and swells to a peak of approximately 2,500 in the summer season. Cape May Point has a significantly older population, where 83% of the population is over age 55 and the median age is 68 years. The borough is almost entirely residential, of which the majority are single-family homes. As of 2010, there were 691 homes in Cape May Point, of which 164 were occupied year-round, 272 were seasonal or recreational homes, and the remaining were vacant or for sale.

Past and Future Flooding

Cape May Point has a long history of recovering, mitigating, and preparing for storms. Over 50 hurricanes and nor'easters have been recorded in Cape May Point since 1930, ranging in impacts from minor flooding to the destruction of dunes and severe beach erosion and flooding of properties. Through the years, the borough has installed both hard and soft infrastructure to minimize future flood damage and educate property owners about preparedness. Installed mitigation measures have included structurally reinforced man-made dunes, beach nourishment, a series of "BeachSaver" artificial reefs, native vegetation, and improvements to the stormwater management system.

As a result of these mitigation measures, particularly the dunes, the impacts of coastal flooding has been limited to landscaping and structures not elevated above the base flood level.[1] Cape May Point is faced with a new set of challenges as sea level continues to rise and the intensity and frequency of storms and precipitation persist. Figure 1 shows past and future trends in monthly mean sea level rise using data from Cape May tide gauge station in Cape May, NJ. Additional data and maps regarding future flood projections, precipitation and climate change are available at Climate Central (http://www.climatecentral.org); NJAdapt (http://www.njadapt.org); and the NJ Climate Adaptation Alliance (http://njadapt.rutgers.edu)/

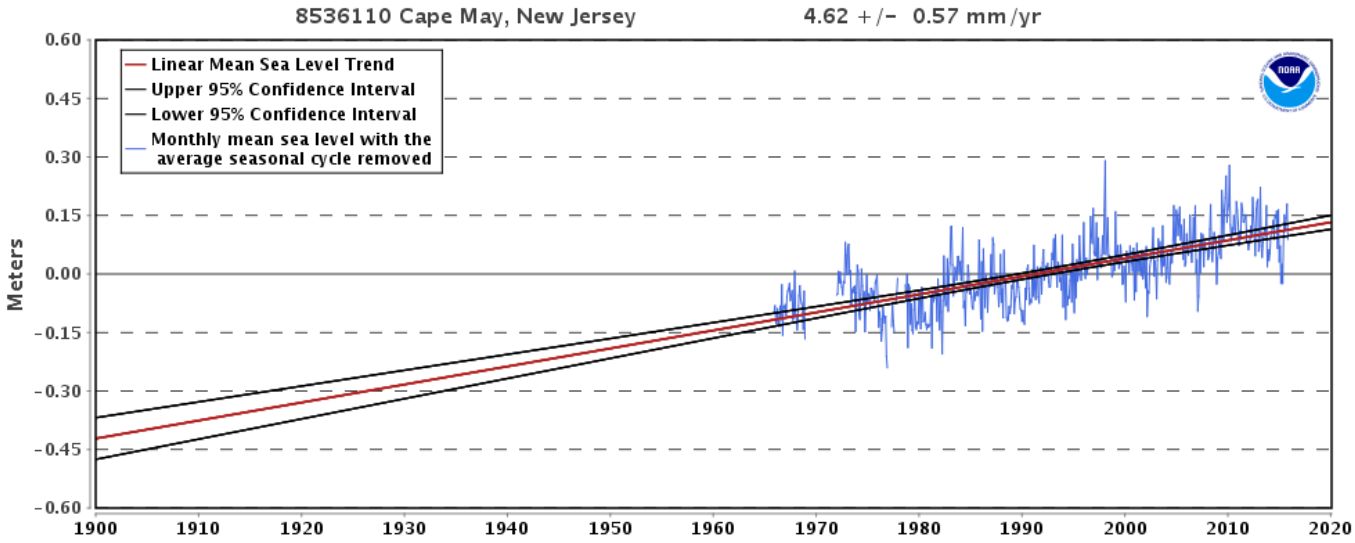

Figure 1. Mean Sea Level Trend at Cape May, NJ (NOAA, 2015).

III. Municipal Coastal Vulnerability Assessment – Methodology

The CVA process is a methodical, step-by-step approach for conducting a comprehensive vulnerability assessment of coastal flooding hazards. It identifies the vulnerability of community assets (identified by the municipality) to a series of future flood hazard scenarios, and the associated consequences to the community. The CVA goes beyond a simple analysis of flooding extent and duration by also examining how flooding will affect the functional capacity of buildings, services, infrastructure, businesses, ecological systems, and residents. The three key steps of the CVA are described below:

- ✓ *Identify and map community assets and selected coastal flood hazard scenario(s)*
  Geographical information systems (GIS) maps are the most effective way of locating and analyzing community assets and flood hazards. Community assets are identified among four categories - Critical Facilities & Infrastructure Systems, Community Resources & Amenities, Districts, Neighborhoods, & Population Clusters, and Natural Resources & Ecosystems – and plotted using GIS. Flood hazard scenarios are selected and are also mapped. Communities are encouraged to use both future sea level rise (daily high tide) and storm surge levels for at least 2050, and, preferably, 2030 and 2100, if available.

- ✓ *Evaluate the vulnerability of community assets.*
  Vulnerability is the predisposition of a community asset to be adversely affected by a hazard—in this case, coastal flooding. Vulnerability is measured by the anticipated degree of *exposure* and *sensitivity*.

[1] Cape May Point Floodplain News and Resource Guide 2012-2013

Exposure is the extent to which community assets may be flooded, measured by magnitude and depth. The magnitude of exposure incorporates the frequency of occurrence (e.g. for high tide, the occurrence would be daily), and the depth of floodwater during the occurrence.

Sensitivity is measured by the extent in which the flooding will impact the following features of the asset[2]:

- Durability of the structure or asset (materials, elevated structure, flood mitigation measures, etc.)
- The ability of an asset to continue to provide its key benefits and operations in the aftermath of a storm event
- The ability to move quickly from harm's way.

Each asset is assigned a single vulnerability rating based on the adverse impacts due to exposure and sensitivity to each hazard. A Vulnerability Rating Key provides guidance in the assignment of these ratings. (See Appendix C).

✓ *Evaluate the overall consequences to the community*

Consequence is the degree of impact on the entire community if an asset will be lost or damaged, or if the assets function is impaired. The degree of impact is measured over eight topic areas that can potentially impact the community. The topic areas include: property damage, population displacement, delivery of services, typical operations / daily life, environment, emergency response, hazardous materials, and municipal budget. The Consequences Rating Key in Appendix D provides guidelines for identifying and rating consequences.

IV. Findings: Vulnerability and Consequences of Community Assets

Cape May Point identified 26 assets to be included in the vulnerability and consequences assessment, those assets shown to be impacted by sea level rise and/or a Category1 Hurricane in 2030 and 2050 were included in the assessment. The assets were identified under four broad categories of potential community assets: Critical Facilities & Infrastructure Systems, Community Resources & Amenities, Natural Resources & Ecosystems, and Districts, Neighborhoods, & Population Clusters. While the majority of assets were assessed individually, some of them were assessed as part of "systems" to ensure the functionality and consequence if one component or asset failed. For example, Cape May Point's historic structures were assessed as a whole incorporating the historic churches which are of spiritual value to the whole community.

The flood hazards scenarios used for this assessment were projected sea level rise and hurricane category 1 storm surge for 2050. The sea level rise projections are based upon a 2013 study by New Jersey climate scientists,[3] and used the 2050 mid-range projections in that study, or 1.3 feet of sea level rise. The sea level rise projections were then layered on top of the mean higher high water (MHHW). The storm surge maps were developed using the NOAA SLOSH (Sea, Lake, and Overland Surge from Hurricanes) model, combined with then

[2] Sensitivity also includes the natural coping capacity of individuals to move out of harm's way. However, contrary to some definitions, it does not include adaptive capacity since by its inherent definition adaptive capacity is a likely future condition that requires action, e.g. elevating structures. The CVA evaluates sensitivity based on the assets' current conditions.

[3] Miller et al. December 2013. "A geological perspective on sea-level rise and its impacts along the U.S. mid-Atlantic coast." http://onlinelibrary.wiley.com/doi/10.1002/2013EF00_0135/pdf

sea level rise projections. The approximate depth of water is based on LiDAR data.[4] Both the 2050 sea level rise and 2050 storm surge maps were obtained from the NJ Department of Environmental Protection (NJDEP).

The community assets were assessed for their vulnerability (exposure and sensitivity) to the above four hazard scenarios, and then for the consequences to the community if the asset was damaged or destroyed. The complete set of data on vulnerability and consequences are included in the CVA Matrix (Appendix A), and summarized in Table 1 below. Since sea level rise is more likely to occur than a Category 1 hurricane, the borough should particularly focus its attention on the assets with high consequences in the sea level rise column. There are also other considerations for interpreting the data in the Matrix and Table 1. The flood hazard maps are based upon the latest technology and most readily available data, both of which will continue to be updated as new data is generated and technology advances. Additionally, there may be existing topographical features or mitigation measures in place that the assessment did not pick up, which could lower the vulnerability rating of an asset. For these reasons, the matrix should be used for general planning purposes and not for specific site planning or design, unless site conditions are field verified. More considerations on the use of the data and "next steps" are offered in Section V.

Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix

Asset Name	Asset Category	Asset Function	Vulnerability Rating		Consequences Rating	
			SLR	CAT1	SLR	CAT1
South Cape May Meadows Wetland Complex	Natural Assets & Ecosystems & Critical Infrastructure Systems	The fresh water wetlands complex was created to provide wildlife habitat. The complex provides protection to the borough from storm surge and flooding events.	High	High	High	High
Higbee Beach Wildlife Management Area	Natural Assets and Ecosystems	Higbees wildlife area protects the borough from flood and storm events that travel up the Delaware Bay.	High	High	High	High
Light House Pond	Natural Assets and Ecosystems	Light House Pond protects the town from storm surge and precipitation induced flooding. It was restored as wildlife habitat.	High	High	High	High
Dunes & Beaches	Natural Assets and Ecosystems	The US Army Corps completes beach replenishment every year as part of a 50 year maintenance plan. The dunes were redesigned by the Corp over the years. The core of the dunes are constructed of gabion baskets along certain sections of the dunes.	Low	Moderate	Moderate	High
Lake Lily	Natural Assets and Ecosystems	Focal point of the community. It is a place for recreational bird watching, functions as mammal, fish and bird habitat. It is used as a mitigation strategy and the outflow pump is run once a month to make sure it is working.	Low	Moderate	Moderate	Moderate

[4] Note that the projected flood events used in this assessment were generated by several models prepared by state and national agencies and professionals, and are suitable for planning purposes. However, due to the uncertainty of projections and accuracy of certain types of data, the maps should not be the sole resource for conducting site specific analyses.

Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix Continued						
Asset Name	**Asset Category**	**Asset Function**	**Vulnerability Rating**		**Consequences Rating**	
			SLR	**CAT1**	**SLR**	**CAT1**
Sunset Boulevard (County 606)	Critical Infrastructure	Evacuation route (describe in the adjacent cell) functions as the only route into and out of town during an emergency and on a day to day basis.	Insignificant	Low	Insignificant	Insignificant
Renters	Districts, Neighborhoods, & Population Clusters	The rental properties and seasonal population contribute to the regional economy of Cape May County.	Insignificant	Low	Insignificant	Insignificant
Borough Hall	Community Resources & Amenities	The borough hall serves as the center of CMP municipal government. The building serves as the Emergency Operations Center during emergency events.	Insignificant	Moderate	Insignificant	Insignificant
Public Records	Critical Facilities & Infrastructure Systems	Public records include all tax records, building and construction plans, permits, elevation certificates, property ownership, and numerous other municipal records.	Insignificant	High	Insignificant	Insignificant
Public Works Building	Critical Facilities & Infrastructure Systems	The offices of CMP Public Works contain the employees and equipment necessary to keep the public works infrastructure maintained and operational year-round.	Insignificant	Insignificant	Insignificant	Insignificant
Pole Barn	Critical Facilities & Infrastructure Systems	The Pole Barn functions as a storage location for municipal equipment.	Insignificant	Insignificant	Insignificant	Insignificant
Fire Station	Critical Facilities & Infrastructure Systems	The fire station contains 2 fire engines (owned by borough) that serve the community during times of emergency. The fire station serves as a heat and cold shelter during extreme temperature events.	Insignificant	Moderate	Insignificant	High
Post Office	Community Resources & Amenities	The post office is the main location for daily social interaction with residents getting mail, and checking in on neighbors to ensure both public and social health.	Insignificant	High	Insignificant	High
The Red Store	Community Resources & Amenities	A high-end restaurant and store, contains minimal everyday items and food.	Insignificant	Moderate	Insignificant	Insignificant
Pavilion Park & Pump Station	Community Resources & Amenities	Passive recreation park. Maintained by taxpayers. Sewer pumping stations located in the park.	Insignificant	Low	Insignificant	Moderate
Churches & Other Historic Buildings	Community Resources & Amenities	The churches and other historic buildings are loved throughout Cape May Point for their spiritual, social, and aesthetic value.	Insignificant	Low	Insignificant	Low

Table 1. Summary of Cape May Point Coastal Vulnerability Assessment Matrix Continued						
Asset Name	**Asset Category**	**Asset Function**	**Vulnerability Rating**		**Consequences Rating**	
			SLR	**CAT1**	**SLR**	**CAT1**
Transfer Station	Critical Facilities & Infrastructure Systems	The transfer station is a county-owned, self-contained, water-tight station that serves as the town's only sewage station transferring sewage out of Cape May Point to Cape May County's waste treatment facility located just north of CMP.	Insignificant	Insignificant	Insignificant	Insignificant
Citizens	Districts, Neighborhoods, & Population Clusters	Approximately 1/3 of Cape May Point's population lives there year round. The year round residents are comprised of a significantly older population with the median age of the community being 68.1. The citizens of Cape May Point donate a lot of their time and money to the preservation of the community through various social and non-profit organizations.	Insignificant	Insignificant	Insignificant	Insignificant

V. Recommendations

Short-Term Considerations

1. Share the results of the Coastal Vulnerability Assessment with owners and managers of vulnerable and at-risk properties and work together to develop mitigation and adaptation strategies.

Many of Cape May Point's identified community assets are owned and managed by other municipalities, state agencies, non-profits, and private industry including natural assets that serve the community as flood hazard mitigation. Furthermore, portions of the evacuation route; utilities; hospitals; food stores; and other critical infrastructure are housed in surrounding communities. Management of these assets is outside of the borough's control and could be subject to changes that would impact the resiliency of Cape May Point. The municipality should work closely with these property owners to share information on flood risks and mitigation measures, and to develop long-term adaptation strategies that will minimize impacts from future sea level rise and storm events.

Suggestions

- Create a regional partnership or workgroup to open a dialog with surrounding communities about flood risks, regional priorities and a regional resiliency plan.
- When working with state, local, non-profit, and federal agencies, share the results of the CVA for consideration in future capital improvement projects and planning processes.

2. Coordinate outreach and education efforts to the general public, sharing the results of the Coastal Vulnerability Assessment.

In order for Cape May Point to better prepare for the future impacts of sea level rise and hurricane events, it is important to have an engaged and informed public. The public should be informed of the vulnerabilities that face Cape May Point, especially populations located in the most vulnerable areas of the borough. The borough should work with the general populous to educate them of the risks and work together to find solutions that will protect Cape May Point at large and keep the fabric of the community intact.

3. Incorporate the results of the Coastal Vulnerability Assessment into the municipal master plan with short-term and long-term strategies for protecting and adapting the community assets and vulnerable areas.

As the primary planning policy document for the community, the master plan should identify areas in the community that

will likely be impacted by future flood hazards, and offer mitigation measures and adaptation strategies to protect the community's assets and properties.

Suggestions

- Include maps of projected sea level rise inundation and future storm events in the land use plan and conservation plan elements of the municipal master plan.
- Identify natural resources that serve as protective flood mitigation measures (e.g. wetlands) and provide recommendations for maintenance and management in the conservation plan element.
- Identify planning policies for mitigation and adaptation strategies to protect properties from future flooding, including sea level rise and extreme storm events, in the land use plan element.

4. Cross-reference the Coastal Vulnerability Assessment in relevant sections of the municipal master plan, floodplain management plan, emergency operations plan, and all hazards mitigation plan.

Community flood risks are influenced largely by land use and development patterns that are grounded in local master plan policies. Hazard mitigation plans provide strategies to reduce these risks, in the past the plans have typically been stand-alone documents that rely upon structural mitigation measures, with little regard to land use and policy measures. The current trend in hazard mitigation planning is the integration with community plans, a trend which is strongly encouraged for all municipalities. Integrating flood risks and hazard mitigation into all local policy documents, especially master plans and hazard mitigation plans, ensures a coordinated, complementary approach to mitigation, and avoids potential conflicts from competing goals and interests.

Resources

- *Integrating Hazard Mitigation Into Local Planning, Case Studies and Tools for Community Officials*, FEMA, 2013

5. Consider the impacts to community emergency management and resiliency with a changing demographic.

Cape May Point's civic participation in emergency preparedness and management is crucial to community resilience. Residents provide donations and conduct fundraising for mitigation and preparedness activities and projects. As volunteers, they also install and maintain many of the plantings on plant and maintain Pavilion Park, Lake Lily and the dunes. However, May Point has a small population base, limited municipal staff and an increasingly aging population with a current median age of 68 years old. This has caused concern among some local officials as to whether there will be sufficient volunteers in the near and distant future to contribute to these important activities. The borough may want to explore incentive programs for residents, social groups and/or organizations to fulfill this need if and when it arises.

6. Consider alternative and innovative strategies to sustain beaches for the future.

The littoral drift that supplies sands to Cape May Point's beaches has been interrupted by the Cape May Canal jetty, starving Cape May Point beaches of sand. Regular beach nourishment through dredging and dumping is costly and time intensive. This system is precarious in that storms are unpredictable and can occur immediately following nourishment, washing away all the sand. Other man-made structure such as reefs, installed to recapture and maintain sands on the beaches, have negative environmental impacts and have created hazards limiting swimming on these beaches. As the sea level rises and storms intensify, the natural beach erosion may become exacerbated. Alternative solutions are needed to reconnect the natural sediment supply. As this is a regional issue, a dialog with the Department of Environmental Protection Coastal Engineering could open up the possibility for alternative solutions including a sand transfer plant or innovative projects similar to the Sand Motor in Delflands Netherlands.

Resources

- Sand transfer pump and plants, http://www.co.palm-beach.fl.us/erm/coastal/shoreline/inletsandtransfer.htm
- Sand Motor, sandbar-shaped peninsula recently installed in Delfland Netherlands (Arjen Luijendijk, http://www.ecoshape.nl/delfland-sand-engine.html, 2011)

Adaptation: A Long-Term Planning Process[5]

Planning for the predicted increase in the frequency and severity of flood hazards is a complex and challenging task. Adaptation to these flood hazards requires a longer planning timeframe for which most municipalities are not accustomed. Incremental steps are key to ensuring progress and minimizing public investments on projects that may be compromised by flooding in the near to distant future. This vulnerability assessment is an important first step in planning for these future hazards. The above recommendations provide key steps immediately following the vulnerability assessment to further identify and confirm vulnerabilities and consequences, and to begin thinking about adaptation. This section frames a strategic approach to identifying, assessing, and implementing long-term solutions to reducing flood risks. The process will need to be repeated periodically to respond to new data, changes in the physical environment and the long-term horizon.

Identify plans, studies and activities that are needed prior to identifying adaptation strategies

The borough should re-convene the CVA committee or any other local flood management committee that includes a similar representation of multiple disciplines, e.g. municipal engineer, floodplain manager, planner, public works official, governing body representative, planning board representative, conservation planner, floodplain manager and emergency management official. This group should determine if there are data gaps or ambiguities in the CVA that need to be addressed to get a complete picture of vulnerability. For example, the community may want to field-verify certain sites or assets to determine if topography or adaptation measures may exacerbate or attenuate the projected flood impacts. If studies or plans are deemed necessary, the committee should identify who might take the lead. Also, the vulnerability and consequence ratings in this assessment should be compared with other current mitigation and planning documents to determine if there are any conflicts that should be addressed. Finally, the committee should determine which of the CVA recommendations will be implemented, if not all, and who should take the lead.

Identify adaptation strategies

Given that the CVA's purpose is to identify vulnerabilities, not pose solutions, the critical next step is to identify and evaluate potential solutions. Using the vulnerability assessment of community assets and other pertinent data and reports (e.g. the hazard mitigation plan, beach nourishment program, flood management reports) identify the broadest range of possible solutions to reduce flood risks. Depending upon the magnitude of the vulnerabilities and consequences, the community may need to consult with coastal engineers outside of the community to fully realize the range of adaptation measures. DEP and other agencies and organizations may be available to provide workshops or host consultation meetings. This process of identifying adaptation strategies could take several months or more to fully understand the options available to the community.

The borough should also determine whether a regional approach to an adaptation project is appropriate, and, if so, arrange for multi-jurisdictional meetings. The county or NJDEP Office of Coastal and Land Use Planning may be able to assist in scheduling or facilitating these meetings.

[5] The term "adaptation" in this document refers to all measures to minimize flood risks, including "mitigation" projects and strategies, a term which is traditionally used by emergency managers and engineers.

Once the broad list of adaptation options is created, the committee should select the most desirable projects and strategies to pursue, along with associated timeframes, funding options and project/task leads. The community may also want to conduct a cost-benefit analysis to prioritize adaptation strategies. Most adaptation projects will need to be reviewed the NJ Department of Environmental Protection to ensure they meet permitting requirements. Projects that cannot be approved or funded at this time should be noted and discussed in future iterations of this process.

Engage the Community

Host community meetings to discuss and solicit feedback on the recommended adaptation strategies while also educating the participants about flood risk.

Seek funding opportunities for adaptation planning and mitigation projects. Below is a short list of potential grant programs:

- NJ Department of Community Affairs (DCA) planning assistance grants
- NJDEP Office of Coastal and Land Use Planning
- NJDEP Office of Flood Hazard Risk Reduction Measures
- FEMA Hazard Mitigation grants
- FEMA Pre-Disaster Mitigation grants
- FEMA Flood Mitigation Assistance grants
- US Army Corps of Engineers
- Other Federal grant programs – see the Appendix of the NOAA Adaptation Guide

Develop an implementation strategy

Adaptation strategies should be integrated into the local hazards mitigation plan, capital improvement plan, master plan and ordinances to coordinate all related land use and adaptation policies and projects in the community. Key individuals and municipal departments should be assigned to lead and/or implement each of the adaptation strategies, along with proposed timeframes and funding options.

Schedule annual meetings

Unfortunately, there may not currently be sufficient resources and assistance available to address all of the community's identified vulnerabilities. Federal and State programs for coastal resiliency are still evolving, and grants, technical assistance, best practices and models, will inevitable become available. The committee should flag the issues for which solutions cannot be found and revisit them in the next adaptation planning process. Key staff should be charged with signing up for state and federal email lists that share grant and program information. And the committee should continue to meet at least once a year, even after all current options for making progress have been exhausted, to consider if new programs or solutions have become available.

Appendix A. Cape May Point Coastal Vulnerability Assessment Matrix

Asset Name	Asset Category	Asset Description	Asset Function	Depth Projections	Exposure	Sensitivity	Vulnerability Rating		Consequences	Consequences Rating	
							Sea Level Rise	CAT1 Hurricane		Sea Level Rise	CAT1 Hurricane
South Cape May Meadows Wetland Complex	Natural Assets and Ecosystems & Critical Infrastructure Systems (Flood Hazard Mitigation)	Interconnected system of ponds, wet meadows, and freshwater wetlands (with tide gates and adjustable weir), dunes and beaches	The fresh water wetlands complex was created to provide wildlife habitat, especially the Black Duck. The wetlands complex is important to the regional ecotourism economy, but provides little to no economic benefit to the borough. The complex provides protection to the borough from storm surge and flooding events. The natural hydrologic flow path of Lake Lily is to drain from the south end of the pond (east under Perry Street to Cape Vineland Creek), into Light House Pond to the series of ponds and wetlands within Cape May Meadows. Staying a freshwater wetland complex is critical Cape May Point because the funding source for beach and dune maintenance is included in the Army Corps allocation for beaches replenishment to reduce salt water intrusion and maintain this freshwater wetland system. Prior to this restoration Cape May Point experienced intense beach erosion and flooding. In addition, flooding was further reduced with maintenance to tide gates (which are maintained and managed by county).	2030: 0.28 - 0.4 2050: 0.74 - 1.48 2030 CAT1: 5 - 3.1 2050 CAT1: 5.17 - 4.63	Sea level rise 2030/2050 - Going to be under water-salt water. In turn will impact the tidal gates, salt water intrusions will lead to conversion to salt marsh over time. With storm surge- wetlands will allow flood waters to enter town.	Asset's function as a flood mitigation. County responsibility to maintain tidal gates. Though not in Cape May Point the municipality does provide financial support. Even though located within Lower township, Lower does not pays (or pays a limited portion) for maintenance of wetlands. The current natural system of fresh water wetlands and ponds will greatly be effected by salt water intrusion but management changes can lead to less impact and allow a slow conversion to a salt marshes. Funding for maintenance of beaches, dunes, tide gates, wetlands may or may not hinge on it staying a freshwater wetland-making the system and the community very sensitive to the impacts of sea level rise. In addition changes to the management of Lake Lily and Light House pond may change the sensitivity of the wetland to saltwater intrusion (e.g. with larger and more continuous water releases) to the wetland complex. With sea level rise inundating the wetland, storage capacity during a large storm may be limited. In addition, to the impacts from sea level rise and a CAT 1 event that is normally experienced by the wetlands, Cape May City uses the wetlands to mitigate flooding in their city as well. During events Cape May City directs and drains water to the wetland, during the same event Cape May Point ensures that the tidal gates remain closed and also pump into wetlands to mitigate flooding in the borough. Cape May Points mitigation practice interferes with Cape May City's mitigation practice causing Cape May City to remain flooded, the problem has caused tension between the respective public works departments.	High	High	The major consequence from Cape May Meadows conversion into a tidal wetland is the potential loss in support and funding from the U.S. Army Corp. The property is currently maintained as freshwater wetland complex. Cape May Point's beaches receive beach renourishment to support the protection measure provided by the dune/beach complex adjacent to the wetland areas. The question arises if and when this wetland complex becomes increase impacted by tidal flow and converts from a freshwater system, will this maintenance program end. Beach replenishment protects the dune systems encompassing the whole coastal border of Cape May Point extending to the north into Cape May on the Atlantic coast and into Higbee Wildlife Management area on the Delaware Bay coast. A loss of funding and support from the Army Corps would result in the deteriotion of the beach & dune system. This deterioration would eventually impair the most critical flood mitigation infrastructure protecting the community. Wetlands conversion would necessitate a modified management for both tidal gates in the Meadows and the Lake Lily pumping station, determining when to keep tidal gates open or closed and appropriate water levels in the wetlands will impact the flood storage within the wetlands and Lake Lily and Light House Pond drainage.	High	High
Higbee Beach Wildlife management area (Northern Wetlands complex)	Natural Assets and Ecosystems	Wetland complex including dunes, salt marshes and maritime and upland forests	Higbees wildlife area protects the borough from flood and storm events that travel up the Delaware Bay. The borough has experienced minimal flooding from this area in the past.	2030: ~0.5 2050: ~1.3 2030 CAT1: 3-4.5 2050 CAT1: 3.2-6	Wetland area will be underwater during high tide scenarios for 2030 & 2050. Flood waters coming from these wetlands is seen in Cape May Point during (floodwaters start leaving the wetlands in 2030) 2050 CAT1 . Wetlands inundated in higher sea level rise.	Asset's function as a flood mitigation. State responsibility to maintain tidal gates and located in Lower township. Managed as natural space will little thought of impacts of sea level rise. Currently under going a restoration of the wetlands and dune complex. Construction is taking place close to the Delaware Bay culvert pipe outlet of the Lake Lily used to drain the Lake during emergency.	High	High	Currently the major consequence to the community is the reduction in flood storage and wave attenuation caused by the continuous inundation of the wetland complex exposing Cape May Point to flooding in the northern residential areas. Restoration and management changes to the Higbee Beach Wildlife management area will impact water flow from this property entering into Cape May Point. Though the exact consequence of restoration to this site as flood protection to Cape May Point are unknown. Input on the development of the restoration project and comments on impacts to the northwest outlet pipe of Lake Lily by Cape May Point is critical for continued flood protection by the wetland complex and continued functioning of the emergency water release through the outlet pipe.	High	High
Light House Pond	Natural Assets and Ecosystems	Pond within Cape May Point State Park. Part of the interconnected pond system in which Lake Lily and South Cape May meadows are in.	Light House Pond protects the town from storm surge and precipitation induced flooding. It was created/restored as wildlife habitat. The natural hydrologic flow path of Lake Lily is to drain from the south end (east under Perry street to cape Vineland creek), into Light House. Cape May Point has control over the weir on the pond to release flows prior to flood event.	2030: 1.1-1.3 2050: 1.7-1.8 2030 CAT1: 5.1-5.4 2050 CAT1: 5.9-6.1	Flood waters coming from this pond is seen during SLR and 2030 & 2050 CAT1. Pond impacted by wetlands being inundated in higher sea level rise.	Asset's function as a flood mitigation will be affected by sea level rise impacts on the connected wetland complex. The municipalities ability to drain the pond before a storm event maybe compromised and may lead to the visualized flooding impacts seen in 2030 and 2050 during storm events.	High	High	As a component of the watershed system which connects Lake Lily to Light House Pond to the Cape May Meadows wetlands complex, changes in the hydrology of the Meadows (the introduction of salt water during high tides) will have reciprocating impacts of the hydrology of Light House Pond. As a functional component of the stormwater drainage system for the community, changes in its ability to drain can cause major flooding consequences. This may also increase the need to pump the water level down using the northwest drainage system (releasing into the Delaware Bay) which puts increased stress on the pumping system.	High	High
Dunes & Beaches: Southeast beaches with constructed reefs, St Peters beach in southeast (no constructed reef), & Northwest beaches (no constructed reefs)	Natural Assets and Ecosystems	Natural beaches dependent on sand replenishment. Restored man-modified dune.	The US Army Corps completes beach replenishment every year as part of a 50 year maintenance plan. The dunes were redesigned by the Corp over the years. The core of the dunes are constructed of gabion baskets along certain sections of the dunes. Some erosion damage on dune and beach occurs annually. The borough has a plan and consistent capital fund to maintain the dunes. All vegetation and plantings are maintained and planted yearly by volunteers and staff. It is a priority of US Army Corps to keep sands coming from Cape May to Cape May Point. The southeast beaches are protected by a systems of groins and constructed reefs/breakwaters (designed in partnership with consultant and Stockton College). Constructed reefs are not present at St Peters beach (located within the souteast beach area) or the northwest beaches. The dunes/beach complex largely function as mitigation measure protecting borough from storm surge, flooding, and wave energy.	2030: N/A 2050: N/A 2030 CAT1: 1 - 2 2050 CAT1: 1.2 - 2.2	Beaches start to decrease because SLR. Both, beaches and dunes exposed storm surge.	Functioning as a flood mitigation, the beach dune complex is the town first line of defense against coast flooding. Cape May Canal jetty has created an interruption in the nautral littorial drift, limiting the sediment transport, producing a need for sand replenishment on the Cape May Point beaches. Beach replenishment tied to Cape May Meadows management as freshwater wetland through federal funding. Beaches are inundated due to sea level rise and storm surge this will limit both the function of the beach for wave attenuation but also the stability of the dunes both on an average day but also during a storm event. Southeast beaches (except for St Peters) are protected from direct impact of storm surge by man-made reefs off shore in front of all beaches. Northwest beaches which are not protected by reefs actually saw sand deposition during the last storm.	Low	Moderate	Loss of the beach & dune system will have the most significant consequence on the community for two reasons. One, loss of beaches, used for recreation, lower property values. People live in Cape May Point for the recreational access to the beaches. Lower property values will have an impact on taxes coming into the municipality, which can in turn limit the municipalities ability to fund beach recovery and dune restoration. Two, the beaches & dunes complex comprise the most important flood mitigation infrastructure protecting the town from storm surge and flooding coming from the Atlantic Ocean and the Delaware Bay. Beaches are an integral part of a healthy dune system, thus a loss of beaches will result in deteriotion and eventual compromise of the dunes. Without the dunes in place Cape May Point would see frequent and destructive flooding beyond the capacity of the community to recover. The community participates in a 50 year beach replenishment program funded by U.S. Army Corps through appropiations from Congress which will terminate in 2060. The scenarios presented in this assessment are based around the same time period. A loss of funding will impair Cape May Point ability to sufficiently support the required beach and dune maintenance to combat impacts from sea level rise and storm surge in the future. Funding may be available in the future but there are no guarantees.	Moderate	High

Lake Lily	Natural Assets and Ecosystems	Natural lake altered by man with a water controlling weir, water circulation systems and a pump systems to lower the lake in emergencies. Considered a focal point of the community.	Focal point of the community. Currently applied for a grant to get handicap access. It is a place for recreational bird watching, functions as mammal, fish and bird habitat. It is used as a mitigation strategy and the outflow pump is run once a month to make sure it is working. Pump is located at the north end of the lake. Lake is ground water feed and impacted by seasonally changing water levels. Flood retention: Stormwater runoff from storm sewer go into the lake, draining gives it room for stormwater runoff. CleanFlow, water circulating product, forces lake to invert more often than twice a year, adds beneficial bacteria, keeps lake bottom clear so they don't have to dredge. This system keeps it functioning as a oxygenated systems, it flips the water over and over. Municipality planted pond lilies to keep water cool using native species of lilies. Weir added to manage the lake level to keep deeper cooler water(stocked with fish). Treated with herbicide. Education available for residents on feeding geese. Municipality is maintaining landscaping higher now to reduce geese. The non-profit, Friends of Lake Lily maintain the lake. Though the lake is stocked with warm water fish species, town doesn't allow fishing. Raised funds and town funding used for maintenance. The outflow is at south end of the lake, the pumps are at north end of lake for drainage west. Lake drained in anticipation of storm (in high flows Lake drained through pumping out into the bay through pipes) Once a month runs pump to make sure its operational, under load. The pump is switched on and turns off automatically once a level is reached. Non-profit that maintains lake, Friends of Lake Lily. Pumps are on platforms at BFE.	2030: N/A 2050: N/A 2030 CAT1: 3.4 2050 CAT1: 3.7	Storm surge flooding due to link between pond and wetland complex. Also will be impacted by groundwater rises from precipitation. Exposure unclear due to the management by the municipality to drain the lake prior to a storm event.	The lake will be impacted by salt water intrusion effects, but will also impact draining. Lake is 14 feet deep never completely drained but impacted by limited rain. Clean flow and for pump for drainage are above the base flood elevation. Level of the pipe leaving the lake unknown. Salt water intrusion can lead to plant and fish die off. As a mitigation effort the Lake may be unaffected, as an aesthetic value it ill be greatly impacted.	Low	Moderate	Sea level rise may result in continuous inundation of the Meadows during high tide, as a result flow from the wetland complex and Light House Pond will flow into Lake Lily. To limit or avoid this backflow the pump in Lake Lily lower the water table and releasing water into the Bay might have to be operated continuously or at minimum more regularly during smaller storms to limit flooding into the neighboring residential areas. Continuous running of the pump may cause a financial and operational strain on the borough. The borough currently has no back up pump. In addition, continuous inundation from high tide could result in Lake Lilly converting to a tidal lake, creating a near ecosystems sustaining different flora and fauna than currently present .	Moderate	Moderate
Evacuation Route	Critical Infrastructure	Route as follows: Seagrove Avenue to Sunset Boulevard (County 606) to Stevens Street (County 607) to U.S. Route 9 to State Route 55.	Evacuation route (describe in the adjacent cell) functions as the only route into and out of town during an emergency and on a day to day basis. Officials call for evacuation of residents of Cape May Point prior to known storm events, as a part of the towns Emergency Operations Plan (EOP). Once an alert goes out from the County, they notify town.	2030: N/A 2050: N/A 2030 CAT1: ~ 2 2050 CAT1: ~ 2.8	Route not exposed to inundation from sea level rise. Route may be flooded by as much as 3 ft. of water during storm events along the route out of town, especially along Sunset Boulevard.	Prior to a known storm event Cape May Point Emergency Management Officials will notify the town to evacuate, usually several days before the event. CPM uses Reverse 911 to notify residents of an evacuation. CMP also employs loud speakers attached to the fire engines to drive around the town and notify residents and visitors alike. With theses evacuation measures in place, the flooding projected to impact CMP's evacuation route does not affect the towns ability to use the route. CMP may have issues in the future from flooded starting in northwest wetlands.	Insignificant	Low	As Cape May Point evacuates days prior to a storm event inundation on the route the consequences are insignificant to the community.	Insignifcant	Insignificant
Renters	Districts, Neighborhoods, & Population Clusters	CMP contains 203 rental properties. CMP experiences a seasonal population of over 2,000 people.	The rental properties and seasonal population contribute to the regional economy of Cape May County.	2030: 2050: 2030 CAT1: 2050 CAT1:	Renters are not notified of potential storm events while staying in CMP.	Not included but an community asset that is not managed as well as the others- via notifications for exit Uses fire trucks when there are no other ways to notify renters.	Insignificant	Low	As Cape May Point evacuates days prior to a storm event before the inundation of the route, the consequences are insignificant to the community.	Insignifcant	Insignificant
Borough Hall	Community Resources & Amenities	Multi-function- meetings, administration functions- finance, construction, zoning, emergency operation services, and town clerk.	The borough hall serves as the center of CMP municipal government. The building serves as the Emergency Operations Center during emergency events. The building contains all the records of the town going back to the incorporation of CMP in 1908.	2030: N/A 2050: N/A 2030 CAT1: ~3 on roads 2050 CAT1: ~4 on roads	Building is above inundation but surrounding areas are not	The building is not inundated but access to and from the building is limited and in close proximity to the wetlands and the flooding related to that. Functioning of the building, when occupied, will still be able to send out messages and announcements—no generator yet do have a plan to purchase one. Maps got them thinking of the placement of it.	Insignificant	Moderate	The surrounding roads may be inundated, but the building itself will not be inundated. Access to the building may be limited temporarily, as such the consequences to the community would be minimal.	Insignifcant	Insignificant
Public Records	Critical Facilities & Infrastructure Systems	Hard Copy and Digital Records of Cape May Point going back to 1908, the year of incorporation.	The public records of Cape May Point reach back to the incorporation of the town (1908). Public records include all tax records, building and construction plans, permits, elevation certificates, property ownership, and numerous other municipal records. The public records are important to the history and character of the town as well as the region.	2030: N/A 2050: N/A 2030 CAT1: ~3 on roads 2050 CAT1: ~4 on roads	Public Records are inside Administration Building. The building is not inundated during potential storm events.	Cape May Point public records have not been digitized until recently, starting in 20xx, all records before this date are paper copies which are only located in the public administration building, with no back-ups. Digitized records are kept at an off-site location. During major storm events public records are moved by hand to another location located out flood hazard areas.	Insignificant	High	The Borough Hall, where the public records are stored, will not be inundated, as such the records will be safe. The borough is working on digitizing all public records from the past and moving forward.	Insignifcant	Insignificant
Public Works Building	Critical Facilities & Infrastructure Systems	The office location of CMP Public Works employees and equipment.	The offices of CMP Public Works contain the employees and equipment necessary to keep the public works infrastructure maintained and operational year-round. Public works infrastructure includes town roads, pumps, weirs, and water bodies that mitigate flood risk, and the beaches and dunes.	2030: N/A 2050: N/A 2030 CAT1: N/A 2050 CAT1: N/A	Building is above inundation but surrounding areas are not but roads are not inundated	The public works buildings are accessible via the road network and are not impacted by flood inundation. Though most secondary roads leading to the PW building within the community are flooded.	Insignificant	Insignificant	No consequences to the community, as the building is not exposed to inundation.	Insignifcant	Insignificant
Pole Barn	Critical Facilities & Infrastructure Systems	A storage location for municipal equipment.	The Pole Barn functions as a storage location for municipal equipment.	2030: N/A 2050: N/A 2030 CAT1: N/A 2050 CAT1: N/A	Building is above inundation but surrounding areas are not but roads are not inundated	The pole barn is accessible via the road network and are not impacted by flood inundation.	Insignificant	Insignificant	No consequences o the community, as the building is not exposed to inundation.	Insignifcant	Insignificant
Fire Station	Critical Facilities & Infrastructure Systems	The only emergency facility of Cape May Point.	The fire station contains 2 fire engines (owned by borough) that serve the community during times of emergency. The fire station serves as a heat and cold shelter during extreme temperature events.	2030: N/A 2050: N/A 2030 CAT1: ~1 2050 CAT1: ~1.5	The fire station is only impacted by future CAT I events, and will be inundated by flood waters.	The fire station as a building, cinder block construction, may be sensitive from flood waters due to hydrostatic pressure. The building may not be constructed to withstand hydrostatic pressure. The fire engines and rated to travel in up to xx ft. of water, and are generally moved outside of CMP prior to a storm event. Emergency services are directed by the Emergency Operations Center located at the Administration Building. The building does have a generator which is not installed but located above Base Flood Elevation.	Insignificant	Moderate	The fire station is an important center for the community, as it functions not only as a fire station but also as a community center, events center, public meetings place, and shelter for cold and heat events. The loss of the fire station would be costly to replace, and could have long-term consequences for the community. No other locations in the borough could serve these other functions. The land is owned by the fire company and it is unlikely that another location could be located and/or acquired. The fire company is considering building additions to the building which would bolster its construction and mitigate potential impacts from storm surge.	Insignifcant	High
Post Office	Community Resources & Amenities	Central Mail Location, no home delivery in CMP.	This year-round post office serves as an important community social center. Cape May Point has no home mail delivery and all residences go to the post office to pick up mail. The post office is the main location for daily social interaction with residents getting mail, and checking in on neighbors to ensure both public and social health.	2030: N/A 2050: N/A 2030 CAT1: ~1 2050 CAT1: ~1.7	The building is impacted by future CAT I events, and will be inundated by flood waters.	The post office is located in a small and old building, not raised above Base Flood Elevation. A major flooding event would likely destroy the building. The current landlord accommodates for the low rental rates required by a postal facility. A new building would most likely increase rental rates above the rates allowable for a post office.	Insignificant	High	A loss of the post office in its current location may result in the loss of the post office permanently in Cape May Point. As a community hub, with regular visits from all community members with the postman acting in a dual role post service provider and health officer ensuring the elder community members are healthy and secure. In addition, the community fears that mail delivery for non-permanent residents piling up will make it apparent the residence are unoccupied. This would pose a security issue, leaving homes vulnerable to break in and theft. With the loss of a post office in town, mail service would most likely be transferred to Cape May City, with either boxes or delivery. The committee began discussions on the idea of broaching the fire company for potential space if expansion is ever proposed.	Insignifcant	High
The Red Store	Community Resources & Amenities	A high-end, seasonal restaurant.	A high-end restaurant and store, contains minimal everyday items and food. The restaurant serves as a regional draw for tourists to the region. The Red Store is not frequented by local residents and does not have a economic importance to Cape May Point itself.	2030: N/A 2050: N/A 2030 CAT1: ~0.25 2050 CAT1: ~1	The building is impacted by future CAT I events, and will be inundated by flood waters.	The Red Store would inundated by flood waters.	Insignificant	Moderate	The Red Store is not important to Cape May Point. If damaged or lost the community would experience limited to no impact.	Insignifcant	Insignificant

Pavilion Park & Pump Station	Community Resources & Amenities	A round pavilion park, located at the center of town used for entertainment and recreation.	Recreation activities. Passive. 20 gardens maintained by residents. Maintained by taxpayers. Could be maintained slightly different. Focal point for activities in the community. Sewer pumping stations located in the park (2nd pumping station in the lowest point in town) has not flooded. The park is raised above the road creating berms stopping stormwater from entering the park. Pumping station raised above bfe	2030: N/A 2050: N/A 2030 CAT1: ~0.5 2050 CAT1: ~1.5	Partially flooded in storm scenarios	Pumping station and well head shed for irrigation- limited sensitive to flooding. The man hole in the pumping station is above flooding locations too. The other pumping station might cause a sensitivity.	Insignificant	Low	The pump station is raised and the system is well maintained. The community has never experienced sewage back-up or stormwater intrusion. The park may experience saltwater inundation from a storm surge event. The storm surge would adversely impact the gardens and grass in the park. The park is maintained through a volunteer program, with some seasonal laborers hired during the summer to cut grass. The park has a $12,000 budget for the monarch garden and irrigation system, but if damaged by saltwater inundation, the cost to restore it would cost approximately $150,000-200,000.	Insignifcant	Moderate
Churches & Other Historic Buildings	Community Resources & Amenities	St. Peter's-by-the-Sea, St. Mary's-by-the-Sea Convent, Marianist Society, Beadle Memorial Presbyterian Church, St. Agnes RC Church, Five Sisters, Lakeside Lodge, Grey Ghost	The churches and other historic buildings are loved throughout Cape May Point for their spiritual, social, and aesthetic value. One of the churches is open year round, while others are open seasonally and used as religious retreats during the summer.	2030: N/A 2050: N/A 2030 CAT1: 0-1.5 2050 CAT1: 0.5-2.2	Most historic buildings would be impacted by future CAT I events. Only one building, the Lakeside Lodge, is not inundated in any event.	All the historic buildings in the town are raised, although not necessarily above base flood elevation. None of the buildings are climate controlled and as such it limits the stress on the structure and wood floors of the structures. The buildings, in general, contain little to no furniture or other items, and do not function during storm events. In the event of flooding structures generally dry out with little to no damage.	Insignificant	Low	The churches and historic structures found throughout Cape May Point have a low vulnerability to a CAT 1 event, thus the consequences to the community are insignificant. In the event that a historic structure were to be destroyed the loss would be adverse to the community's sense of place. It is unclear if all of the historic structures would be rebuilt due to the value of the lots underlying the buildings.	Insignifcant	Low
Transfer Station	Critical Facilities & Infrastructure Systems	Sewage station that pumps sewage out of CMP to county waste treatment facility located just north of town.	The transfer station is a county-owned, self-contained, water-tight station that serves as the towns only sewage station transferring sewage out of Cape May Point to Cape May County's waste treatment facility located just north of CMP.	2030: N/A 2050: ~0.10 2030 CAT1: ~2.5 2050 CAT1: ~3.0	The transfer station would be completely inundated in CAT I events.	The transfer station is elevated above Base Flood Elevation and the system itself is within a self-contained and water-tight casing making the sensitivity minimal.	Insignificant	Insignificant	The transfer station is raised and the system is well maintained. The community has never experienced sewage back-up or stormwater intrusion.	Insignifcant	Insignificant
Citizens	Districts, Neighborhoods, & Population Clusters	The permanent and seasonal population of Cape May Point.	Approximately 1/3 of Cape May Point's population lives there year round. Another 1/3 is lives there off and on throughout the year, and the last 1/3 are seasonal living there mainly through the summer months. The year round residents are comprised of a significantly older population with the median age of the community being 68.1. The citizens of Cape May Point donate a lot of their time and money to the preservation of the community through various social and non-profit organizations. The various organizations help maintain the dunes protecting the borough, as well as maintain the parks and Lake Lily. The borough is operated by a few municipal employees, who contain the vast majority of the historical and working knowledge of the borough, and who does the vast majority of the work required through administration and public works throughout the municipality.	2030: NA 2050: NA 2030 CAT1: NA 2050 CAT1: NA	The citizens of Cape May Point are not physically exposed to inundation from sea level rise or a CAT 1 event.	The vulnerability of the citizens lies in the slowly changing demographics of Cape May Point. Only a handful of individuals, municipal employees and some volunteers, have all the operational and historical knowledge of the town. The public works department is comprised of only 3 individuals who are responsible for not only the day to day operations of the borough but are also responsible for emergency situations. Almost all the municipal staff and volunteers are significantly older. The borough relies heavily on volunteers and donations to maintain and operate the dunes, parks, and Lake Lily. New home owners to the area are more likely to be seasonal residents and may or may not continue the tradition of donations and volunteerism in Cape May Point. The borough operates through a strong sense of community engagement that may be threatened by changing demographics.	Insignificant	Insignificant	The consequences to Cape May Point of a changing demographic is not necessarily linked to sea level rise or CAT1 events in the future, but rather the ability of the community to operate and effectively deal with these issues in the future. Loss of even a few of the municipal employees or certain volunteers could have drastic impacts to the community's current operational capacity and could set back the borough's progress towards municipal resilience. A decrease in volunteers and/or donations could result in the need for the borough to hire more municipal staff and a new management plan for the dunes, parks, and Lake Lily. A lack of donations could result in a need for higher taxes or beach tag rates.	Insignifcant	Insignificant

Appendix B – Vulnerability Rating Key

Vulnerability Rating Key	
Level	**Vulnerability Rating Given Hazard Exposure and Sensitivity**
Insignificant	*Exposure to Flooding:* This community asset is located out of harm's way. *Physical/Structural Damage:* No physical/structural damages expected. *Disruption/Impairment:* No disruption in function, accessibility, or development and delivery of basic services and supplies. No apparent impacts to services provided by, typical operations, routine or daily life. *Accessibility:* Key staff able to access facilities or locations without interruption.
Low	*Exposure to Flooding:* The majority of this community asset is located out of harm's way. *Physical/Structural Damage:* Minor physical/structural damages expected. *Disruption/Impairment:* Limited disruption in function, accessibility, or development and delivery of basic services and supplies. Limited impacts to typical operations, routine or daily life, if any. *Accessibility:* Key staff able to access facilities or locations with minimal interruption.
Moderate	*Exposure to Flooding:* A significant portion of this community asset is located in harm's way. *Physical/Structural Damage:* Moderate physical/structural damages sustained. *Disruption/Impairment:* Moderate level of disruption to accessibility or mobility of asset, amenity or population. Moderate level of interruptions to development and delivery of basic services and supplies. Typical operations, routine or daily life moderately affected by flood hazard scenario. *Accessibility:* Secondary evacuation and access routes available for use if/when primary systems fail.
High	*Exposure to Flooding:* The majority of this community asset is located in harm's way. *Physical/Structural Damage:* Severe level of harm (destruction on property or degradation of function and/or injury) is expected, resulting in a high degree of loss. Asset, amenity or population is unable to withstand flood impacts. *Disruption/Impairment:* Severe, potentially irreparable challenges faced requiring significant changes to asset functioning, community's daily life or "new normal." Production, provision of services or daily routine expected to sustain high degree of disruption. Significantly reduced operational capacity of community assets and amenities; long term or permanent relocation of asset, amenity or population. *Accessibility:* Severe disruptions to accessibility of asset, amenity or population or the disruption of this assets causes accessibility issues to other community assets. Key individuals, material supplies, core operating systems and functioning interrupted or unavailable.

Appendix C – Consequences Rating Key

Consequences Rating Key		
Level		**Given Vulnerability of Assets, Rate the Magnitude or Severity of Consequences**
1	Insignificant	*Property Damages:* Only minor property damage. *Typical Operations/Daily Life:* No impacts or disruptions to typical operations, routine or daily life. *Environment:* No lasting environmental degradation. *Emergency Response:* No adverse effects to emergency response. *Hazardous Materials:* No increase or change in community/ecosystem exposure to toxics or hazardous materials. *Municipal Budget:* Negligible operational costs.
2	Minor	*Property Damages:* Limited property in narrow affected area damaged or destroyed. *Typical Operations/Daily Life:* Limited disruption to typical operations, routine or daily life. *Environment:* Minor damage or loss to habitat and species or functioning of the systems as a component of "coastal green infrastructure" of the community. Small loss of natural resource base. Increased, but tolerable stress on ecosystem. *Emergency Response:* Slight decrease in emergency response times and effectiveness *Hazardous Materials:* Limited hazardous materials spill, manageable clean-up and remediation. *Municipal Budget:* Additional but tolerable operational costs.
3	Moderate	*Property Damages:* Substantial property in affected area damaged or destroyed. *Population Displacement:* Long-term population displacement over a broader segment of the population. *Typical Operations/Daily Life:* Daily life is affected such that only redundant systems can be used for an extended duration. *Environment:* Major damage or loss of habitat or functioning of the systems as a component of "coastal green infrastructure" of the community that may be permanent with adverse impacts. *Emergency Response:* Emergency response is strained resulting in significant degradation of response effectiveness and times. *Hazardous Materials:* Large hazardous material spill with significant risk to humans and ecosystems. *Municipal Budget:* High operational costs straining local budgets
4	High	*Property Damages:* Majority of property in affected area damaged or destroyed *Population Displacement:* Permanent and widespread population displacement. *Delivery of Services:* Long-term interruption of supply and services. *Typical Operations/Daily Life:* Majority of community operations, daily life patterns intensely impacted for an extended period. *Environment:* Permanent degradation of habitat or functioning of the systems as a component of "coastal green infrastructure" of the community. *Emergency Response:* Need for emergency services exceeds full capacity and/or services are degraded and not functioning. *Hazardous Materials:* Hazardous material spill that requires multi-year clean-up and poses significant health or ecosystem risk.

Appendix D – Municipal CVA Committee

Municipal CVA Committee

Cape May Point convened a group of municipal representatives and community leaders to participate in the CVA process facilitated by Sustainable Jersey. The meetings were held on August 12th, 2015 and October 28th, 2015 at the Cape May Point Borough Hall. The meeting attendees are shown in Table 1.

Table 1. Cape May Point CVA Committee

Participant	Title	Affiliation
Anita Van Heewsyk	Deputy Mayor	Cape May Point
Irene Schreiner	Emergency Management Coordinator	Cape May Point
Bill Gibson	Public Works Director	Cape May Point
Ed Grant	Administrative Consultant	Cape May Point
Mike Keosky	Planning Board	Cape May Point
Rick Brown	Planner	NJ Department of Environmental Protection
Jack Heide	Resiliency Manager	Sustainable Jersey
Emma Melvin	Green Infrastructure Coordinator	Sustainable Jersey

Appendix E – Cape May Point Coastal Vulnerability Assessment Maps

Table of Maps

Municipal Boundaries

Asset_Cate

- Community Resources & Amenities
- Critical Facilities & Infrastructure Systems
- Natural Resources & Ecosystems

Borough of Cape May Point

Community Assets

Prepared by Sustainable Jersey, January 2016

N W E S

0 0.0475 0.095 0.19 0.285 0.38 Miles

Municipal Boundaries

Asset Category

- Community Resources & Amenities
- Critical Facilities & Infrastructure Systems
- Natural Resources & Ecosystems

2030 Sea Level Rise

Depth

High : 50 ft.

Low : 0 ft.

Borough of Cape May Point

2030 Sea Level Rise

Prepared by Sustainable Jersey, January 2016

N W E S

0 0.0475 0.095 0.19 0.285 0.38 Miles

Municipal Boundaries

Asset Category

- Community Resources & Amenities
- Critical Facilities & Infrastructure Systems
- Natural Resources & Ecosystems

2050 Sea Level Rise

Depth

High : 50 ft.

Low : 0 ft.

Borough of Cape May Point

2050 Sea Level Rise

Prepared by Sustainable Jersey, January 2016

N W E S

0 0.0475 0.095 0.19 0.285 0.38 Miles

Borough of Cape May Point

2030 CAT1 Hurricane

Municipal Boundaries

Asset Category

- Community Resources & Amenities
- Critical Facilities & Infrastructure Systems
- Natural Resources & Ecosystems

2030 CAT1 Hurricane Depth

High : 100 ft.

Low : 0 ft.

Prepared by Sustainable Jersey, January 2016

N W E S

0 0.0475 0.095 0.19 0.285 0.38 Miles

Municipal Boundaries

Asset Category

- Community Resources & Amenities
- Critical Facilities & Infrastructure Systems
- Natural Resources & Ecosystems

2050 CAT1 Hurricane Depth

High : 60 ft.

Low : 0 ft.

Borough of Cape May Point

2050 CAT1 Hurricane

Prepared by Sustainable Jersey, January 2016

N W E S

0 0.0475 0.095 0.19 0.285 0.38 Miles