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Effects of Sea Level Rise and Storm Surge Events On Cape May County's Tourism and Commerce

One of New Jersey's most productive resources and vital tourist attractions are its coastal regions. People have always chosen to live near water, and so many people's lives circle around the coast the way it is today. However, with projected levels of sea level rise within the next one hundred years, people will need to make a lot of changes. Many aspects of life along the NJ coast are being threatened, an important one being areas used for tourism and commerce. There have already been many problems caused by sea level rise and storm surge events, and surely many more will surface.

Cape May County, NJ is home to the country's oldest shore resorts and is a very attractive place for tourists for many reasons and therefore bases much of its business activity around tourism. Natural features like sandy beaches and salt marshes attract people, and businesses provide visitors with opportunities for boat rentals, camping, golf, hotels, antique shops and entertainment. Cape May City and Ocean City also have historic districts, known for their Victorian architecture and whaling museums. Tourism in New Jersey is a \$38 billion industry with more than 80% coming from the four counties that run along the Atlantic Ocean. Tourism economic expenditures in Cape May County in 2007 amounted to \$5.1 billion, which is about 13% of the state's total tourism expenditures. Cape May, Ocean City and the Wildwoods lead in economic expenditures

for the county since they are the largest resorts with the most tourism inventory (Cape May County Department of Tourism).

Cape May County is among the most susceptible coastal counties that will be most affected by sea level rise in the future. It is important to the state's economy to examine the possible effects on the tourism industry and other areas of commerce that can be affected by this rise in sea level. Using the 1988 NGVD value for mean sea level and valuing that at 0.0 meters, we found high and low estimates for sea level rise and spring high tide from that 0.0 elevation for the next one hundred years. Combining those numbers with FEMA estimates for 30 and 100 year storm surges, it was possible to create ArcView maps to show areas that will become inundated in ten different scenarios. The first scenario showed a low estimate of sea level rise of 0.6 meters, and the second scenario showed the high estimate of 1.2 meters. Scenario three showed what would happen in a 30 year storm event with a sea level rise of 3 meters (from the low estimate). The fourth and fifth scenarios showed a one hundred year storm event from both the low and high estimates, respectively causing rises of 3.5 and 4.1 meters. The second set of scenarios used spring high tide as the base from which to show the storm events, which added 0.7 meters to each scenario.

In order to examine the effects of estimated sea level rise on the county's tourism and commerce, I first had to find areas in the county being used for those purposes. I decided to look at the parcels of land and how they were zoned using Mod IV parcel data for the county. This format used a great many abbreviations in their zoning types, so I did a lot of research to find out the meanings of the abbreviations and figure out which zones would influence the county's commerce. I found all parcels zoned for business,

commercial, office building, recreation, tourism, historic, mixed-use residential and industrial activity, all of which in some way bring money to the county. Overlaying scenarios one, three and four, I was able to see how much land would be inundated by these different scenarios of sea level rise. I had used the more conservative values, but still the results were shocking. I found a 13% loss of land zoned for tourism and commerce with the low estimation of sea level rise of 0.6 m (Figure 1). This percentage loss I took from the total \$5.1 billion for the county, and estimated a loss in expenditures of about \$6.63 million. With a 2.4 meter 30 year storm surge, I observed a 68.4% loss (Figure 2), leading to a loss of about \$3.48 billion for the county. Finally, I looked at a 2.9 meter one hundred year storm surge, and saw a 93.7% loss (Figure 3), which lead to a loss of about \$4.78 billion.

There are bound to be errors in these estimates; I evenly distributed the \$5.1 billion because I could not find the individual amounts earned on each parcel of land, and that would lead to an error in amounts of total expenditures lost. Also, it is hard to predict human activity in the future—whether they will allocate inland, move altogether from the coast, or even need to. This study was meant to show what was at stake in a general sense rather than study individual losses.

Impacts of Sea Level Rise and Storm Surge Events on Economy and Tourism in Cape May County, NJ

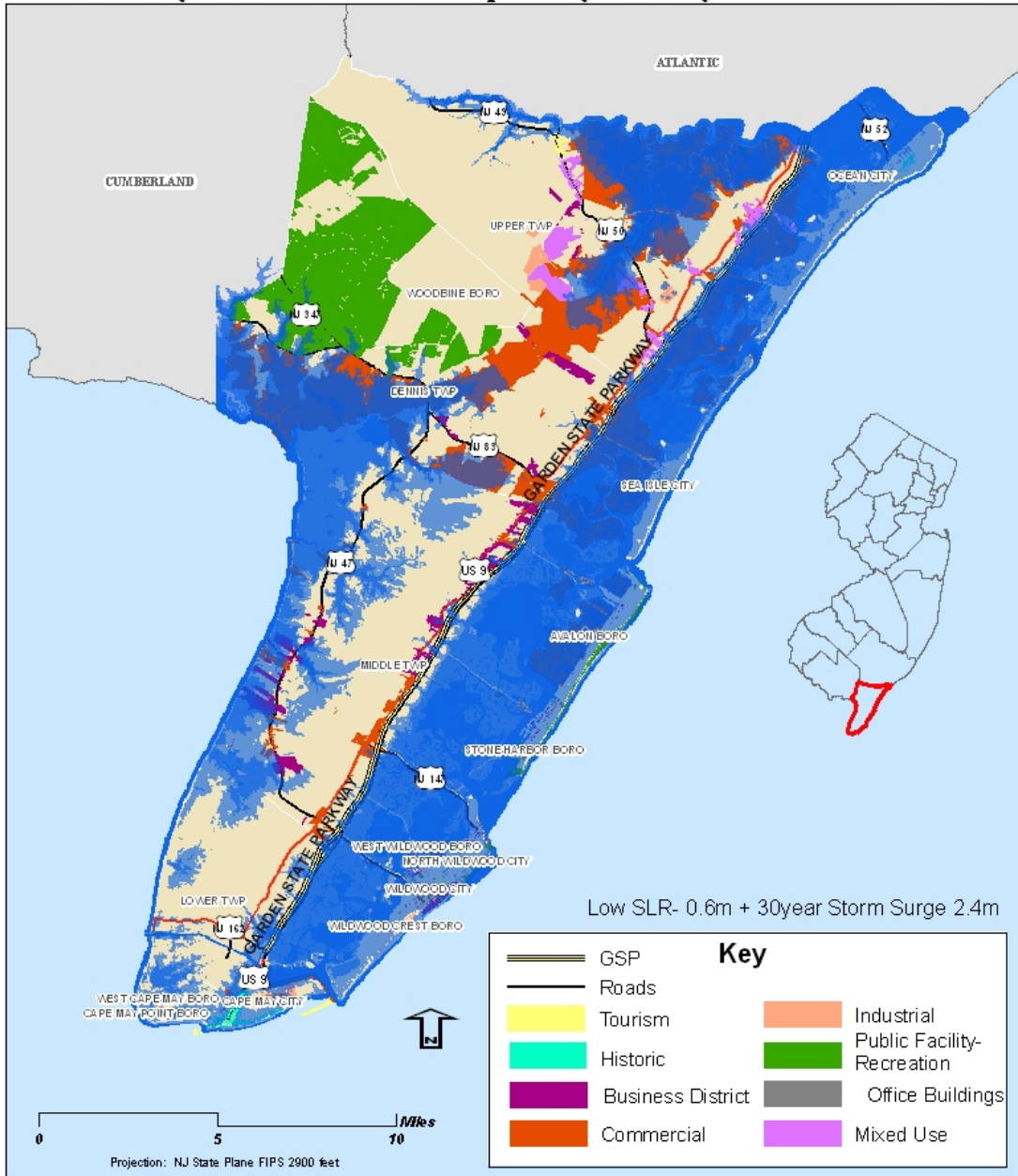


Figure 2.

Impacts of Sea Level Rise and Storm Surge Events on Economy and Tourism in Cape May County, NJ

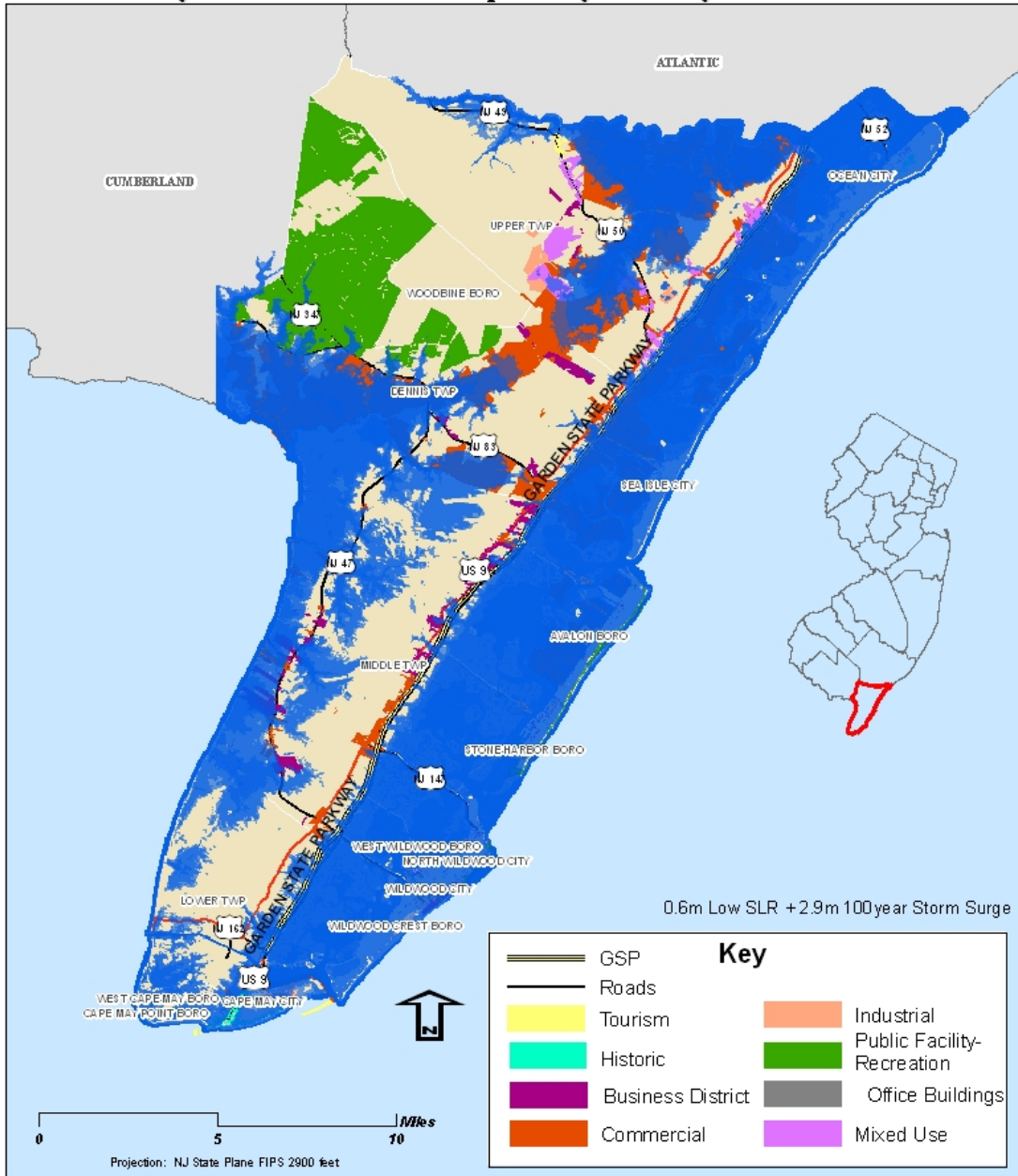


Figure 3.