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Maintaining Military Missions: Coordinated Approach to Sea Level Rise Infrastructure Impacts

The Lowcountry Council of Governments administered two Joint Land Use Studies (JLUS) focusing on maintaining and strengthening the military missions of Marine Corps Air Station Beaufort and Marine Corps Recruit Depot Parris Island while minimizing land use conflicts with the surrounding communities. One of the JLUS recommendations was to investigate potential effects of SLR. These bases, which have been highlighted for their potential for land loss from SLR, are major factors in the local economy of Beaufort County.

To address the JLUS recommendations, this study examined the risks to targeted infrastructure in the adjoining areas (e.g., roads, sewer, water) from SLR and the costs associated with maintaining essential service to the bases. The approach for identifying at-risk infrastructure was 'scenario agnostic'. Rather than a set scenario, the envelope of SLR curves, adopted from the USACE and NOAA, were used to map the infrastructure's relative risk from SLR for several different time periods. In addition to the risk envelope, this study includes uncertainty in elevation (lidar) and tidal (VDatum) data. The mapping datum was chosen based on an assessment of the inundation frequency; the level chosen had a 50% chance of occurring at least once each month.

Impacts of climate variability on the various infrastructure are time-dependent; planning for future work toward solutions necessitates a level of priority. Prioritization can either help bring various groups together or divide them. To achieve the former, it was deemed important to have a flexible, non-single scenario approach to the natural risks (SLR in this case); and a shared understanding of the importance of the existing or planned infrastructure components. The process included assigning the assets a vulnerability score for each time period based on its exposure and sensitivity to inundation at the chosen frequency; and a criticality score for its function and importance in providing services in the community and on the DoD bases. Finally, a replacement/retrofit cost was defined for each asset and used to define budget-level planning scenarios. The results and techniques of this resiliency project will be shared along with the hurdles and their working solutions.