



SHORELINES – March 2010

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Sea-Level Rise Forum Summary

As briefly mentioned and reviewed in [last month's](#) edition of *Shorelines*, the umbrella organization for the State's environmental resource agencies (the N.C. Department of Environment & Natural Resources – a.k.a. NCDENR) hosted a Science Forum on Sea-Level Rise in North Carolina at the Hilton North Raleigh on January 14th and 15th. Besides showcasing a series of expert climate and sea-level scientists, the forum was used as a platform to release a preliminary report concerning the current and projected rates of sea-level rise in North Carolina. Most notably, the report projects sea-level rise ranges in 25-year intervals through 2100 that are envisioned to provide a foundation for future policy development and adaptation planning. NCDENR, via the Division of Coastal Management, has also created a forum website at <http://dcm2.enr.state.nc.us/slr.html>; complete with the agenda, many of the presentations, and the results of a public sea-level rise survey completed in 2009.

As a quick reiteration, global warming and its affect on sea level is an important set of processes impacting barrier islands like Bogue Banks and others along the gentle sloping southeast Atlantic coastal plain because increasing temperature causes a rise of sea level due primarily to the melting of continental ice packs (or glaciers) and thermal expansion of seawater. Obviously North Carolina's world famous low-lying estuarine marshes are also likely to feel the repercussions of rising sea-level as well. Thus to no surprise, the NCDENR Sea-Level Rise Forum garnered a lot of interest, especially the preliminary report.

So what did this report disclose? Listed below are the take home messages the Shore Protection Office took away from the presentation.

Sea-Level Rise Scenarios - The preliminary report was prepared by the [State's Science Panel](#), a group appointed by the Coastal Resources Commission comprised of geology, engineering, and biology researchers and practitioners. The Science Panel Metrics Report included three sea-level rise scenarios based upon the best available science;

- (1) 0.38 m (1.26 ft) by 2100, or a rate of 4.27 mm/year
- (2) 1.00 m (3.28 ft) by 2100, or a rate of 11 mm/year
- (3) 1.4 m (4.59 ft) by 2100, or a rate of 15 mm/year

However, the blanket rate is 4.27 mm/year (the low range) until the year 2030 when the scenarios begin to diverge – i.e., the rate of sea-level rise in each scenario is the same until 2030. This concept is neatly presented in the accompanying graphic (figure 1).

Why Three Different Scenarios? – The recent/historical record utilizing tide gauges and satellite altimetry (water elevations obtained via satellite) demonstrate sea level is rising. Key indicators such as the volume of greenhouse gases in the atmosphere (CO₂ mainly) and physical evidence such as increases in the acidification of sea water, increasing rates of glacial melt, etc. indicate the rate of sea-level rise we can expect to see for the remainder of this century should increase from its present rate of roughly 3 mm/year. How much more of increase is the big question, hence why there are three scenarios that will be modified in

the future based on observations of sea level 5, 10, etc. years from now. The Science Panel Metrics Report also recommends a more robust tide gauge network than presently exists; including additional gauges and maintenance of existing gauges.

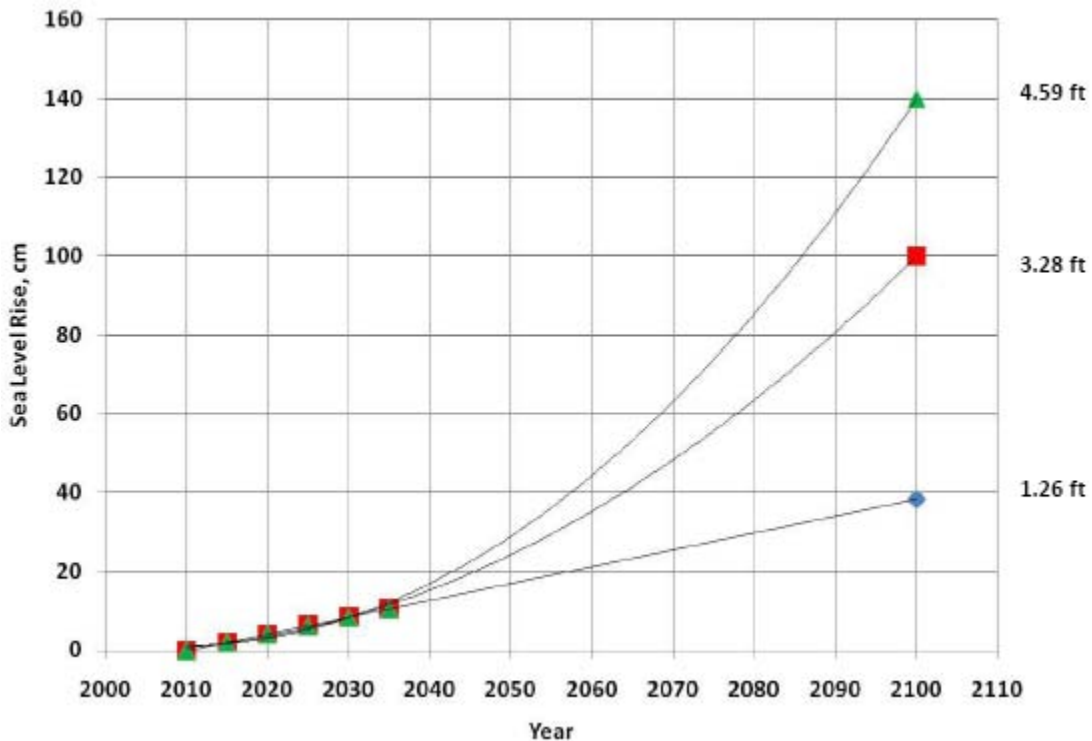


Fig.1 – Graphic depiction of the N.C. Science Panel’s three sea-level rise scenarios presented in their Metrics Report released on January 15th.

Implications (short & long term) – In the short term and based solely upon the Coastal Resources Commission chair’s comments, we can expect a couple of things, including; (1) a big push for sea-level rise and climate education, and (2) a requirement that sea level be taken into consideration when preparing Land Use Plans.

Now for some conjecture. In the bigger picture, many State and federal government agencies are facing a similar sea-level dilemma – sea level is rising, but the rate of future rise is difficult to predict let alone determining its impact on a parcel-by-parcel level, which is what local governments and property owners care about at the end of the day. In other words, there is clamor to do “something” about sea-level rise but innocently, no one can tell us exactly what. Thus society is likely going to continue to wrestle with these issues for years to come.