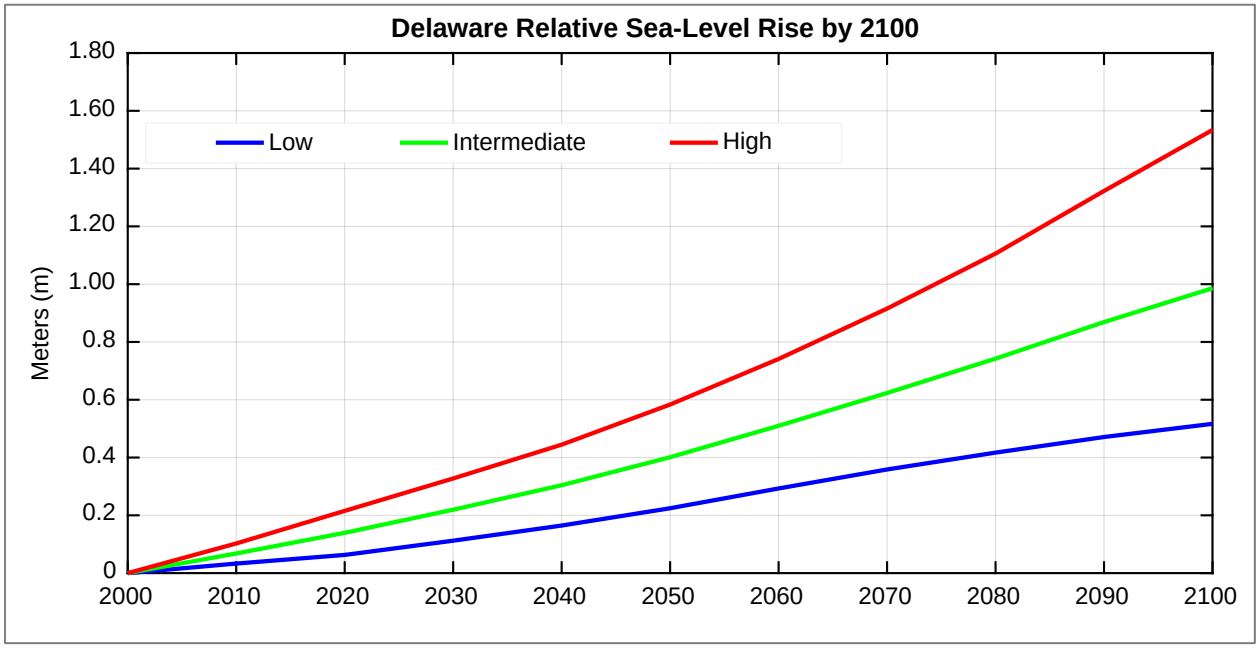
Frequently Asked Questions

2017 State of Delaware Sea-Level Rise Planning Scenarios

Q. Why should Delawareans care about sea-level rise?

Delaware is vulnerable to coastal flooding due to its low and flat land elevation and coastal geography. Sea-level rise increases the mean sea level over time, which in turn increases the height of high tides (exacerbates flooding and erosion) and increases the height of low tides (inhibits draining of flooded areas.) Low-lying areas will likely experience more frequent shallow tidal flooding. Sea-level rise also amplifies the risks of flooding and damage to property, natural habitats, and infrastructure from storms that bring heavy rain, waves, and/or storm surge. Over time, sea-level rise will expand the federally regulated floodplain under the National Flood Insurance Program (NFIP). FEMA's NFIP identifies high risk zones needing federal flood insurance based on current modeling and historic data which does not include future sea-level rise. Historically, over 20% of FEMA flood claims come from properties located outside of the federal flood zone. It is critical that communities and decision makers have access to future sea-level rise information in order to get a comprehensive understanding of risk and the likelihood of worsening coastal flooding.



The Low, Intermediate, and High planning scenarios correspond with 5%, 50%, and 95% probability levels, respectively, under a "business as usual" greenhouse gas emissions future. (For example, the High curve indicates a 95% probability that sea-level rise will not exceed any year's value on that curve)

Year	Delaware SLR Planning Scenario		
	Low (blue curve)	**Intermediate (green curve)**	**High (red curve)**
2030	0.11 m / 0.36 ft	0.22 m / 0.72 ft	0.33 m / 1.08 ft
2050	0.22 m / 0.72 ft	0.40 m / 1.31 ft	0.58 m / 1.90 ft
2080	0.42 m / 1.38 ft	0.74 m / 2.43 ft	1.11 m / 3.64 ft
2100	0.52 m / 1.71 ft	0.99 m / 3.25 ft	1.53 m / 5.02 ft

Q. What are sea-level rise scenarios and how do they support planning and decision making?

The scenarios are based on current observations and the latest scientifically-supported climate model projections. These scenarios are not forecasts or predictions because estimating future sea-level rise depends heavily on global greenhouse gas emissions in the future; the rate of emissions may increase or decrease depending on global mitigation efforts. Therefore, the scenarios adopt one vision of the future: a "business as usual" rate of emissions that closely mirrors current day trends, and then incorporates rigorous modeling and scientific observations to generate a framework to plan within. The scenarios offer a window to a possible future so that land uses, infrastructure, and property upgrades can be designed with that future state in mind.

Q. Is this the first time the State has issued sea-level rise scenarios?

No, the State of Delaware first issued sea-level rise planning scenarios in 2009. The 2009 scenarios served as the scientific foundation for a comprehensive needs assessment of Delaware's critical infrastructure and later, Executive Order 41 (2013) which recommends that officials factor sea-level rise into capital improvement projects and land use decisions when there is some risk of flooding. It further states: *"DNREC shall periodically update the scenarios with the best scientific data available and distribute new guidance to state agencies."* In 2016-2017, DNREC Delaware Coastal Programs and Delaware Geological Survey convened a new Delaware Sea-Level Rise Technical Committee to update the scenarios based on the latest scientific research and modeling.

Q. How do the 2017 scenarios differ from the 2009 scenarios?

Though the amounts of sea-level rise by year 2100 are within a few centimeters of the 2009 projections, there are some notable differences in how the scenarios are constructed. The Technical Committee chose a framework based on models that are more sophisticated and of a higher resolution than was previously available. Furthermore, the Committee adopted a science-based methodology that assigns probabilities, or confidence levels, to each value on the graph, not just year 2100. Regionally observed data are directly integrated into the projections, which is important for Delaware because we experience a much higher rate of sea-level rise compared to the global average. Most notably, the new framework improves decision-making capacity by allowing greater flexibility and confidence when choosing a scenario. Now, planners and decision-makers can choose any year on the graph to plan to, because any value for sea-level rise along the curve is valid.

Q. How do I select a scenario and use it in planning decisions?

Selecting the appropriate scenario (Low, Intermediate, or High) or a maximum projected amount, is a matter of understanding: 1) the time horizon or life cycle of a project; and 2) tolerance for risk.

Knowing risk tolerance is absolutely crucial to planning and decision-making because these projections are not predictions. Projects with a shorter service life (20-30 years) will not encounter the same increase in sea-level rise as projects with a longer service life. It is also helpful to remember that sea-level rise is one component of overall flood risk in the state. Thus, the 2017 scenarios are a planning tool and should be used in combination with other data and risk-based information, including FEMA floodplain maps. In general, projects with a longer lifespan and/or low tolerance for risk will best be served by the High curve. Evacuation roads, substations, and fire stations are some examples of projects fitting this criteria. Projects with shorter lifespans and higher tolerances (boat ramps, parks) are better suited for the Low or Intermediate curves.

New inundation maps are available to support planning and assessment. To access the Committee's Technical Report and the coastal inundation maps, please visit: www.dgs.udel.edu/slr