

Case Example: Visualizing Flooding to Support Critical Area FIL Projects

Using the Tool

The Maryland Flood Explorer is a valuable tool for visualizing flooding in a community from the municipal, county, or regional/watershed level. This tool can be used to help identify areas of predicted flooding, from both sea level rise and high tides, that can be targeted for flood reduction projects using critical area fee-in-lieu (FIL) money. Such projects could include removal of existing impervious surface from flood-prone areas; planting of native, salt-tolerant vegetation in flood-prone areas; or other structural and non-structural designs to accommodate flooding where possible and redirect it where necessary.

Example Scenario

A town located on the Eastern Shore and within the Critical Area with a highly developed waterfront wants to address current and predicted flooding along its tidal shoreline. The Town has a robust Critical Area fee-in-lieu program and has created an MOU with the Critical Area Commission (CAC) to identify the types of projects that may be implemented using FIL money. These include projects that address climate resiliency, enhance and/or protect habitat, improve water quality, increase public access to the water, and mitigate impacts to overburdened/underserved communities.

Using the CAC's FIL Guidance Document and its recommended resources and tools, the Town is working to identify and target priority projects on which they can spend their FIL money. These projects include mitigating flood potential in vulnerable areas, protecting and enhancing wetland migration areas, and protecting potentially vulnerable public access.

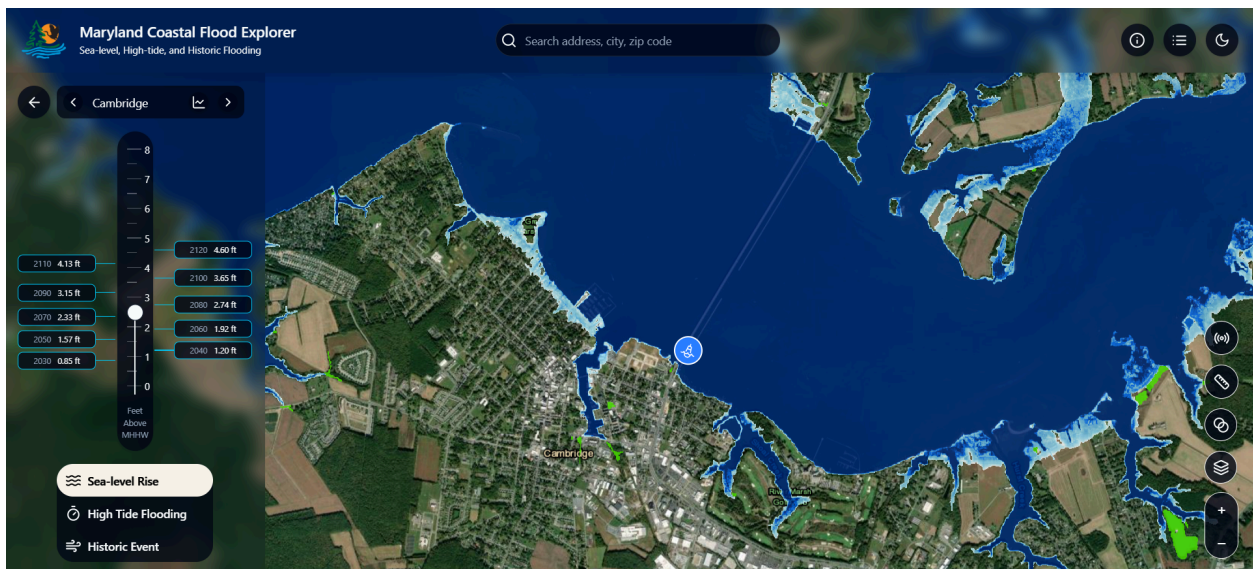
Tool in Action

- Open the [Maryland Flood Explorer](#) and enter the name of the town
- Click the **Basemaps & Layers** button and enable the following layer (which can be toggled on and off):
 - Under the Society tab, turn on Muni's to show the municipal boundaries
 - Under the Natural tab, turn on the CBCA Approved (for jurisdictions with approved updated Critical Area boundary maps) or CBCA Proposed (for jurisdictions who have not yet approved their updated boundary maps)



This screenshot shows the municipal boundary (red shading), along with the Critical Area boundary (red, yellow, and green designations). You may find that keeping these layers on when viewing flood information hinders visibility so it may be helpful to turn them on and off as you navigate the other data within the tool.

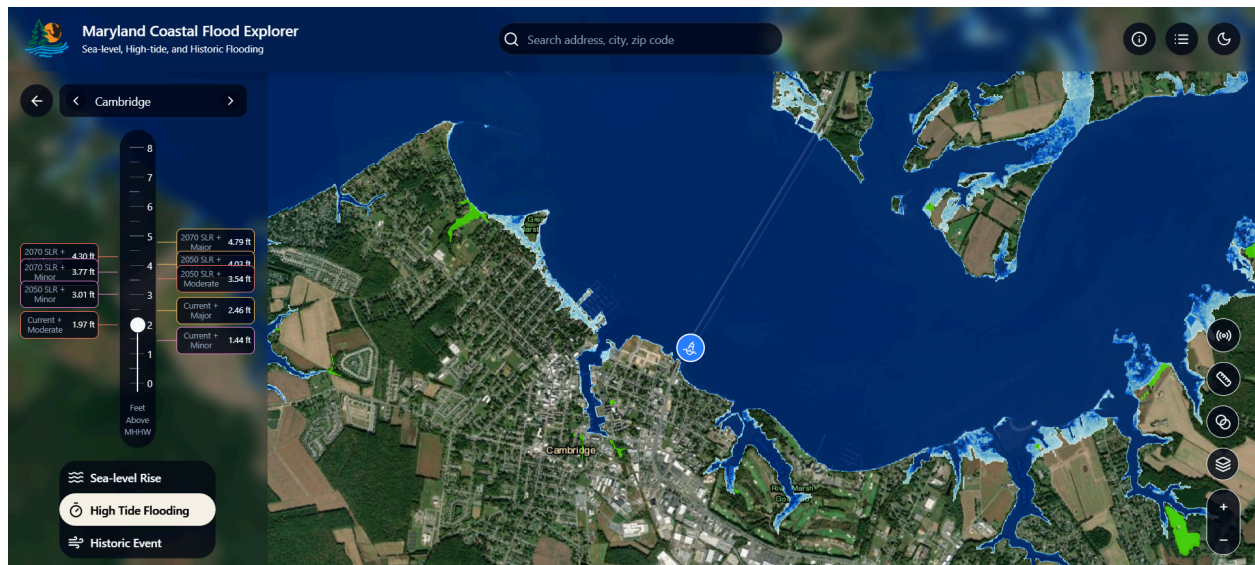
- Click on Sea Level Rise at the base of the slider bar. Moving the slider bar up and down, the vulnerable areas are apparent. The areas at risk increase substantially between a 2050 (1.57 ft) planning horizon and a 2100 (3.65 ft) planning horizon.



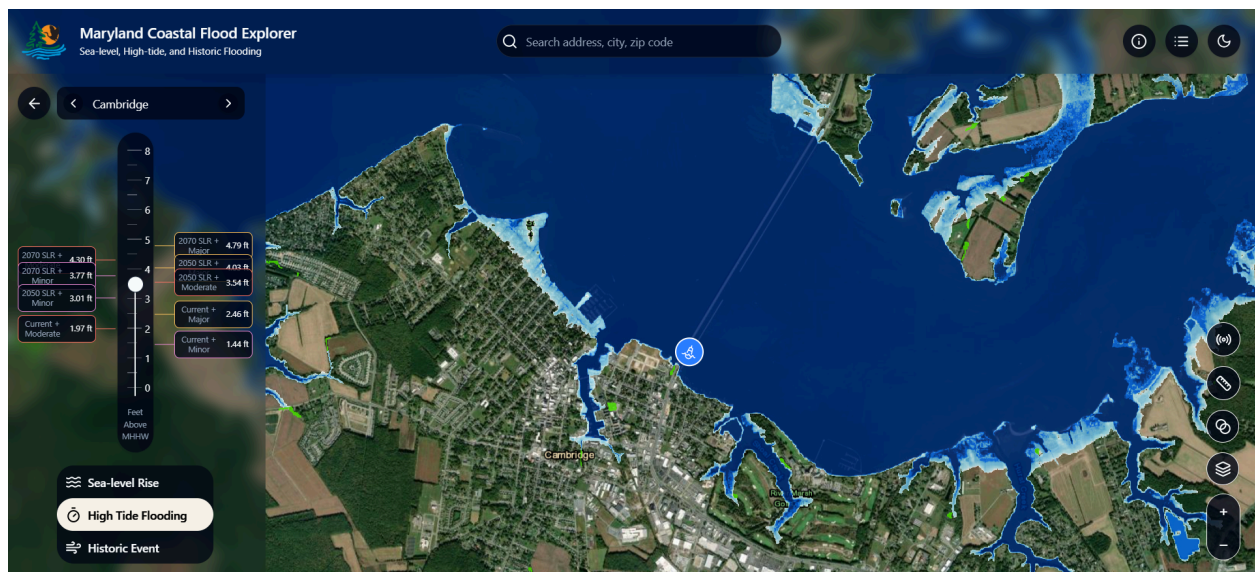
This screenshot shows predicted inundation in 2070 with a 2.33-foot increase in sea level.

- In order to avoid overcrowding the view, it is recommended to turn layers off when not in use.
- On the slider bar, toggle on the “High Tide Flooding” which will visualize the combined impacts of sea level rise and tidal flooding.

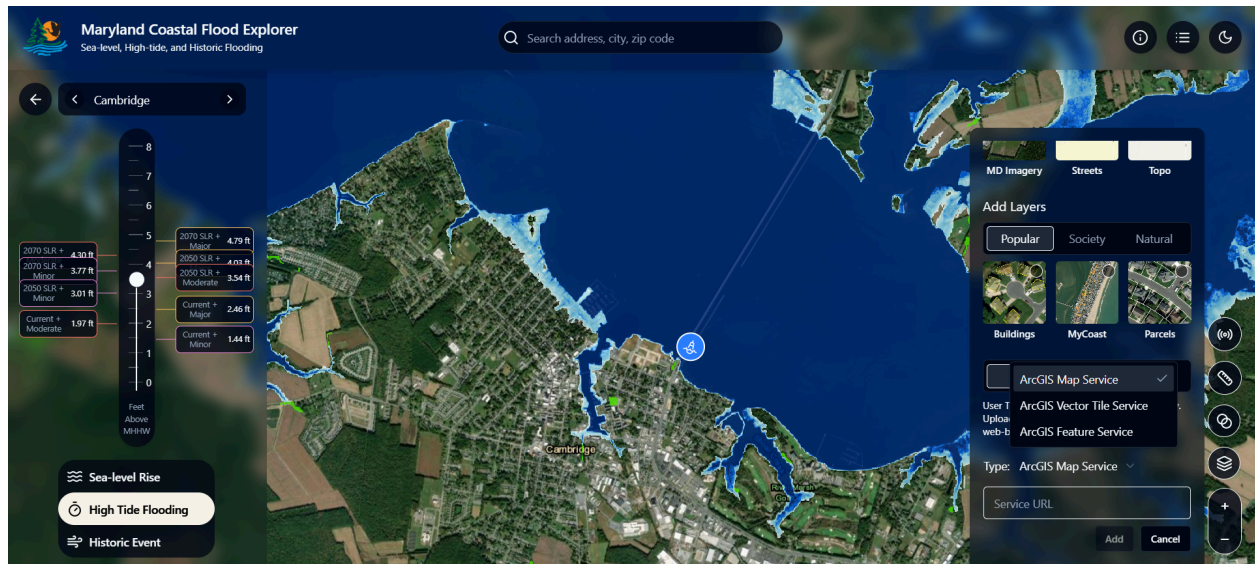
- Raise the slider to the “Current + Moderate” level to see which parts of the community are at risk with the current sea level and a moderate high tide event.



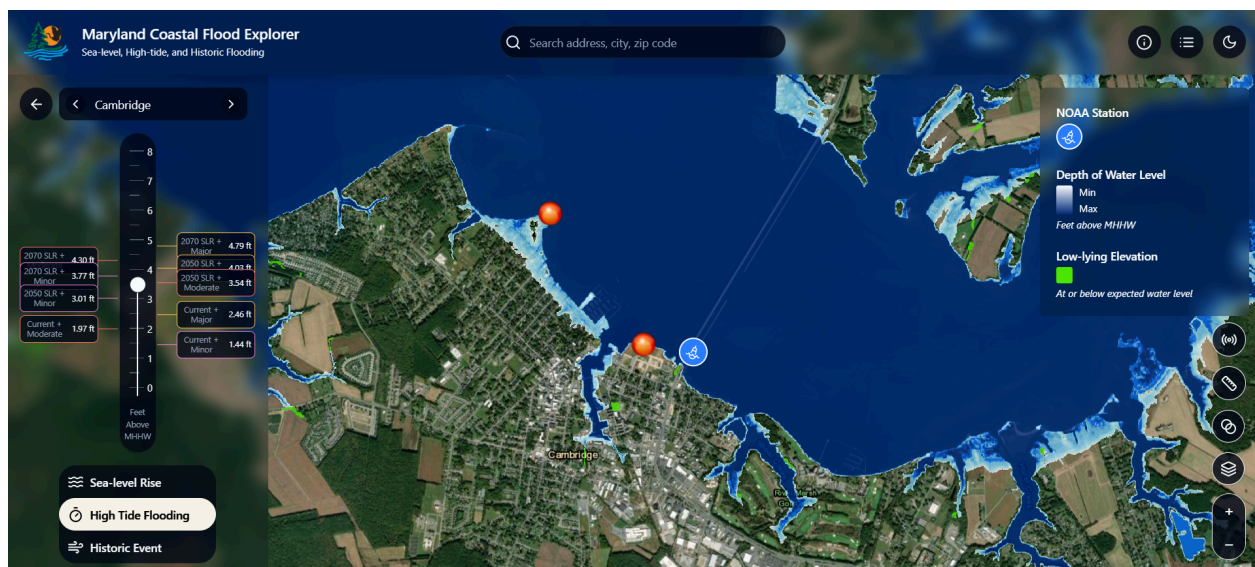
- Raise the slider to the “2050 SLR + Moderate” level to see which areas of the community are at risk with predicted 2050 sea level rise and a moderate high tide event.



- To add community-specific layers, click on the **Basemaps & Layers** and choose “File” to upload from desktop files or online map services. Choose “URL” to copy and paste a link to a layer (i.e. from the curated [Additional Layers](#) list). When uploading via URL, be sure to select the correct type of layer from the drop down menu. There is also a list of state-wide datasets provided on the Case Studies page with guidance on which layer type to choose from the dropdown.

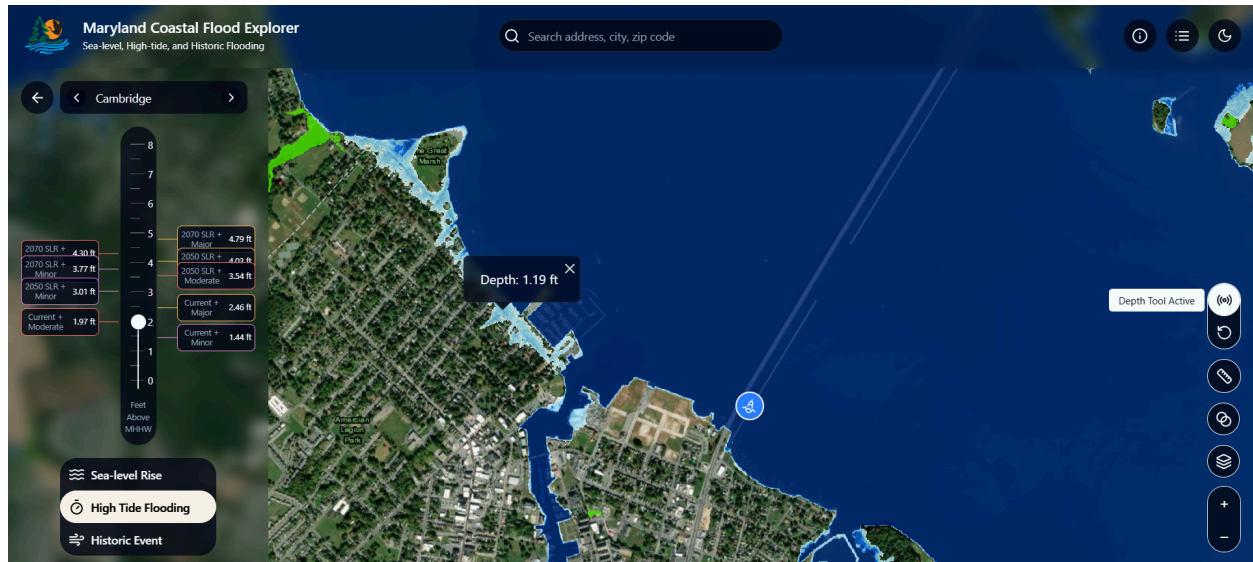


- Suggested layers to add include:
 - Hospitals, urgent care facilities, nursing homes, public schools, and wastewater treatment plants
 - Public access.
- Helpful preloaded layers include
 - **Parcels** – (Located under Add Layers, Popular) This shows the boundary for the parcel of interest
 - **Buildings** – (Located under Add Layers, Popular) This shows the building footprints.
- If a community has additional layers developed specifically for their area, these can be added as files uploaded from the computer or as Map or Feature service layers.



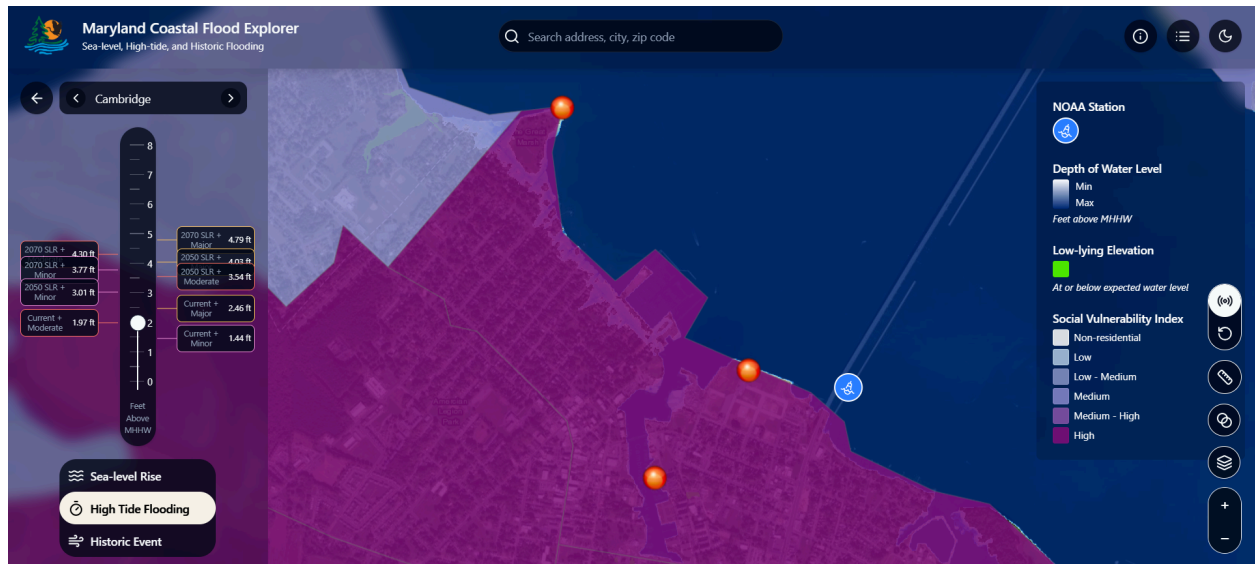
This screenshot shows the public access points within the Town. This data layer was added using the URL provided in the Curated Additional Layers list. Note, data layers added via URL will not show up on the legend within the tool.

- Click the depth tool in the right hand corner of the screen. Then select roadways in communities potentially impacted by flooding.
- Now, move the slide up to visualize potential flooding under different tidal and sea level rise scenarios
 - Note: Six inches of water on the roads is enough to reach the bottom of a standard sedan, making control of the vehicle difficult and potential stalling. A foot of water is enough to move a small car. Emergency vehicles use ~10 inches as the cut off for “safe” depth to drive through.



This screenshot shows a moderate high tide flood event under current conditions. It produces over 1 foot of flooding on the street that runs parallel to the shoreline in the Town.

- Identifying underserved or overburdened communities
 - Click the **Basemaps & Layers** button and enable the following layers (which can be toggled on and off):
 - **SVI** - (Located under Add Layers, Society) This shows the Social Vulnerability Index created by the CDC.
 - The SVI layer can help to identify overburdened/underserved communities. From the SVI layer, planners can see that the entire region falls within the same category. Click on the legend to see that this community is considered “high” according to the index.
 - Also note that there are three public access points located in the community with a “high” SVI.
 - After using the SVI layer, turn it off so that the viewer is not too crowded.



This screenshot shows the public access points and the SVI score for the Town's waterfront area. You can see that there are three public access points located within the community with a "high" SVI. Furthermore, at least one of these sites is vulnerable to flooding under current conditions + a moderate high tide event.