

# Action Plan

## Category 7 – Mapping and Modeling

### Action 7.1 – Map Interior Flooding Locations



## Overview and Implementation Strategy:

While FEMA floodplain maps highlight areas at risk of coastal and riverine flooding, the maps do not identify locations with interior flood risk. For example, Bloomingdale and multiple neighborhoods in northeast DC were flooded in 2012 and 2020, respectively, are not near any FEMA defined floodplains. Ultimately the Flood Task Force seeks to make neighborhoods that are at risk of interior flooding more resilient through large scale infrastructure projects, individual home upgrades, and increased public awareness. The first step, and the goal of this action plan, is simply to map the areas of the city that are vulnerable to interior flooding.

### Integrated Flood Model

Over the next few years, the District will do state-of-the-art modeling to create these interior flood maps via the Integrated Flood Model (IFM). This project is being led by DOEE in close coordination with DC Water. When complete, maps will be available to the public showing the areas that are flooded in multiple rainfall scenarios that include climate change factors. These maps will use latest modeling software, storm sewer information, and on-the-ground surveys to create detailed and accurate representations.

The maps will be used to test the designs of resilient infrastructure and can also be used to inform property owners prior to major improvements or construction on their property so that they may build in a more flood resilient manner. In the future, Task Force agencies may also decide to use these maps to focus outreach efforts, risk reduction programs, or policy changes. For example, DC Water could target interior flooding areas for a backwater valve installation program, or DOEE could use the maps to determine eligibility for FloodSmart Homes. The District could also decide that new homes in these interior flood risk areas should have the livable floors above a certain height or be automatically included in a District run flood insurance program.

### Short Term Mapping

Because of the complexity of the IFM, producing high quality maps will take some time. The Task Force recognizes the importance of providing District businesses and residents with information as soon as possible, so that they can prepare their structures before the next rainstorm. In support of that, Task Force members will develop an internal process in 2023 to notify permit applicants if they are building in an area with a history of interior flooding, and take any necessary precautions in the design.

### Centralized Reporting

Lastly, while the IFM will help predict where interior flooding occurs, the District also needs to develop a centralized place for tracking incidents of internal flooding throughout the District. Multiple agencies including HSEMA, DOEE, DC Water, and DDOT have kept their own databases of interior flood reports they have received, but they are not easily linked together. One goal of this action plan is to ensure that these databases can be linked together and data can be more easily accessed between agencies. This will help District agencies to more efficiently collaborate on addressing resident issues and provide an important way to calibrate and validate the IFM as it is being developed.

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#### Impacted City Ward/ANC:

- All Wards Citywide as there are flood vulnerable areas (from interior rainfall flooding) that are not in FEMA mapped floodplains, and these flood vulnerable areas in the District are expected to increase with climate change. A comprehensive and integrated map showing interior flooding will allow agencies to be better informed on where to target their outreach and mitigation efforts.

#### Lead Agency:

- DOEE

#### Supporting Agencies, Roles/Commitments:

- HSEMA
- DC Water
- DDOT
- DOB

#### Background:

##### Impact of this Effort on Task Force Goal:

This Task Force Action item aims to create interior flooding maps so that residents and business can be aware of their flood risk, and for the District to know where to focus its efforts in building resilience.

##### Historical Context:

- In 2017, DC Silver Jackets created a [map](#) and [report](#) of historical flooding occurring in the District prior to 2015. The results of this report was the identification of the need for a District-wide Integrated Flood Model.
- HSEMA sent out a survey to residents following the September 10, 2020 flood, to determine which neighborhoods and areas across the District experienced flooding. The results of the survey were input into a [map](#). HSEMA also compiled a secondary [map](#) that included results of the September 10 flood reports received by the Joint All Hazards Operations Center as well as the results of the 2017 DC Silver Jackets mapping study.
- DOEE has historically tracked flooding complaints internally in a regularly updated spreadsheet, but recently DOEE has updated their Flood Risk Portal to include a “[Submit a Story](#)” feature that allows residents to submit geotagged locations of flooding they have experienced.
- DC Water tracks data on all calls about issues related to high standing water, blocked storm water catch basins, and blockages in the sewer system.
- DDOT has compiled a list of areas that are prone to flooding. The locations are identified by street intersections, stretches of road between two intersections as well as larger geographical areas.
- The District has allocated \$5.77 million for the IFM, managed by DOEE. The contract to develop the IFM began on March 2022 and can extend up to March 2027. The funds will

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be sufficient to develop maps projected to be complete in 2025, but additional funding is necessary to create neighborhood scale resilience plans for neighborhoods that are identified as having interior flood risk

### Equity

#### How does this action prioritize equity and residents who are most impacted?

Equity is about improving outcomes for all, while prioritizing resources to those most impacted by an issue. Interior flooding is something that can happen anywhere in the District, but when it does occur, it will have greater impacts for low-income residents who are least able to handle the costs of repair and clean up. By requiring mapping these at risk areas, we can help ensure that all residents are aware of their risk of interior flooding, and help focus the District's resources into the areas that need it most, but may have been overlooked since they were not on FEMA floodplain maps.

### Timeline:

Fiscal Year	Responsible Agency	Action
2023	DOEE	Create an internal process to notify permit applicants if they are building in an area with a history of interior flooding based on historic data points from DC Water, DDOT, and HSEMA.
2023	DC Water / DOEE / HSEMA / OCTO	Collaborate on creating a centralized place for flood reporting or for data interoperability. Sign MOU if necessary. Will be in conjunction with HSEMA's action plan on centralized reporting and the DC Water / DOEE action plan on Drainage Committee Improvements.
2022-2025	DOEE	Oversee the creation of the Integrated Flood Model.
2026	DOEE	Consider regulating development within the interior flooding floodplains, as well as making results of the IFM available to the public
	HSEMA/DC Water/DDOT	Update operating procedures to reflect awareness of additional interior flood zones
	DISB	Consider insurance requirements for those living in areas deemed at risk of interior flooding

### Budget:

**Total Estimated Cost:** \$1,652,000

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#### Cost Breakdown by Phase / Action:

- \$152,000 total (sourced across three agencies) for the creation of a centralized flood damage reporting platform.
- \$1,500,000 in additional funding for the IFM to support the creation of neighborhood scale resilience plans.
- No cost (just staff time) to create an internal process to notify construction permit applicants if they are in an area historically affected by interior flooding.

#### Long Term Budget Requirements: None

Fiscal Year	Responsible Agency	Funding Source	Amount to be Requested	Description
2023	DOEE	FEMA CAP Grant	\$52,000	Funding to support centralized place for flood complaints.
2023	DC Water	Local	\$50,000	Funding to support centralized place for flood complaints.
2023	HSEMA	Local	\$50,000	Funding to support centralized place for flood complaints.
2024	DOEE	Local Capital	\$1,500,000	Funding to add to the IFM contract to allow for creation of neighborhood scale resilience plans.

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#### Public Outreach and Input:

##### Public outreach & engagement approach/actions:

As interior flood areas are identified, each agency will tailor their outreach and mitigation efforts to target those residing in these increased flood risk zones.

##### What were the Public Comments of relevance to this Action?

Following severe storm and flooding events, District agencies have received feedback that residents want to be better informed of their flood risk and want agencies to be more proactive on flood mitigation, particularly in areas known to flood frequently.

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