



## District of Columbia DOT: Climate Change Adaptation Plan

**The District of Columbia Department of Transportation's (DDOT) Climate Change Adaptation Plan describes the impacts that the District is likely to experience due to climate change, outlines a framework for identifying priority assets, and sets forth a series of action items for implementing the Plan.**

The Introduction of the DDOT Climate Change Adaptation Plan discusses recent extreme weather events in the District, including the 2010 snow storm, Hurricane Irene in 2011, and Hurricane Sandy in 2012. It emphasizes that critical importance of weather and climate to the transportation system, as even minor weather events can cause major disruptions. The Introduction also outlines the process that facilitated the development of the Plan and notes that climate change adaptation was one of eight priorities in DDOT's Sustainability Plan. DDOT held a climate change adaptation workshop in October 2012, focused on developing ideas to integrate climate change adaptation approaches into DDOT's policies and practices and finalizing development of the DDOT Climate Change Adaptation Plan.

Chapter 2 provides an overview of the likely impacts that climate change will have on the country and the District of Columbia. DDOT did not acquire downscaled climate data to complete the Plan. Instead, the Plan provides a rough approximation of risk based on four climate change indicators: national trends for temperature and precipitation, local trends for extreme weather, and national, regional, and local sea-level rise trends. According to the Plan, rising temperatures are the most certain

climate outcome for the District. The Plan includes maps showing historical data and future projections for temperature, sea-level rise, and precipitation over different timescales, seasons and under different emissions scenarios. The Plan also discusses the role of storms and notes the importance of trees in capturing rainfall, among other benefits, and presents a map of DC showing regions covered by tree canopy, grass/shrubs, bare earth, water, or impervious cover.

In assessing the District's vulnerabilities, DDOT followed the three-part framework laid out by FHWA in an earlier version of their Climate Change & Extreme Weather Vulnerability Assessment Framework. DDOT performed a qualitative assessment of the vulnerability of District infrastructure. First, they identified potentially vulnerable assets in locations that are particularly sensitive to climate variability. To determine the vulnerability of an asset, DDOT assessed: (1) the probability of an impact occurring; (2) the probability that the asset can withstand the change; and (3) the magnitude of the consequences if the asset cannot withstand the change. Consequences include both the costs of service disruptions and repairs, as well as any damage to the surrounding community from the failure. Bridges and culverts were subjected to particular scrutiny to determine whether they could be expected to survive future storms.

Chapter 5 identifies strategies for adapting vulnerable facilities and provides a list of "action items" for implementing the Plan. The Plan lists potential adaptation strategies for different types of assets, organized by the climate change





impact the strategy is designed to address. For example, strategies include:

- Evaluate bridge expansion joints and pavement design to address the effects of heat on bridges and roadways
- Improve hydraulic openings for culverts and bridges, evaluate vertical clearance for bridges on waterways, and improve pumping capacity of drainage systems for tunnels to address the impacts of sea-level rise.

The Plan includes thirteen specific action items for DDOT:

- Perform a vulnerability and risk assessments for critical assets;
- Train staff on climate change issues;

- Update design standards and specifications;
- Incorporate climate adaptation as a criterion for project selection and into all stages of project development;
- Flag future projects in potentially vulnerable areas;
- Secure funding for climate change adaptation; and
- Developing a more detailed Climate Change Adaptation Plan.

The Plan was developed based on research and guidance from the National Cooperative Highway Research Program (NCHRP) and Federal Highway Administration (FHWA).

**Publication Date:**

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**For More Information:**

[http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/ddot\\_climate\\_adaptation\\_plan.pdf](http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/ddot_climate_adaptation_plan.pdf)

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