A scenic view of the Washington Monument and the Potomac River at sunset. The sun is low on the horizon, casting a golden glow over the water and the sky. The Washington Monument is visible in the distance, reflected in the water. In the foreground, a dark wooden park bench is partially submerged in the water, suggesting flooding. The sky is filled with soft, colorful clouds.

# **CLIMATE READY DC**

## **The District's Climate Adaptation & Preparedness Plan**

★ ★ ★ DEPARTMENT  
OF ENERGY &  
ENVIRONMENT



# Agenda

- **Background on the planning process**
- **Results of climate impact and vulnerability assessments**
- **Overview of Climate Ready DC Plan**
- **Q&A**



Part One

# **CLIMATE READY DC BACKGROUND**



# Sustainable DC Climate Adaptation

## 2032 Goal:

Advance physical adaptation and human preparedness to increase the District's resilience to future climate change.

## 2032 TARGET:

Require that all new buildings and infrastructure projects undergo climate impact analysis





# Climate Ready DC Plan

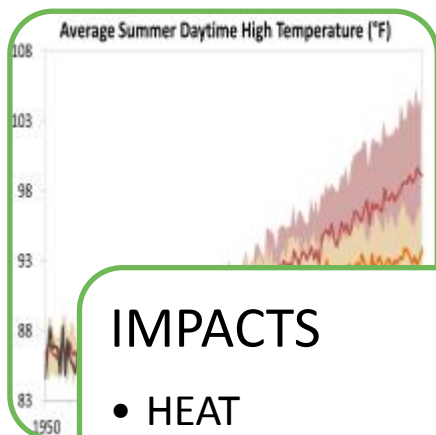
## Three-part Analysis to:

1. Analyze Climate Impacts ✓
2. Assess Risks & Vulnerabilities ✓
3. Identify & Prioritize Solutions (underway)





# Climate Ready DC Framework



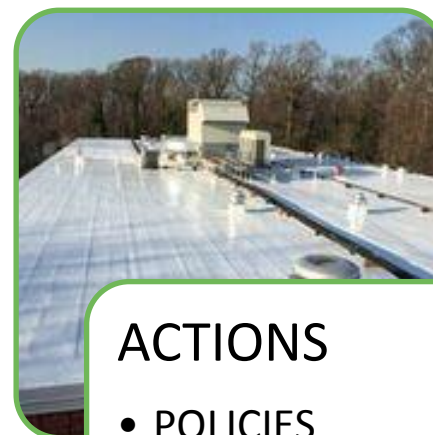
## IMPACTS

- HEAT
- PRECIPITATION
- SEA LEVEL RISE
- FLOODING



## RISKS

- HEALTH
- INFRASTRUCTURE FAILURES
- WATER QUALITY



## ACTIONS

- POLICIES
- STANDARDS
- PROJECTS

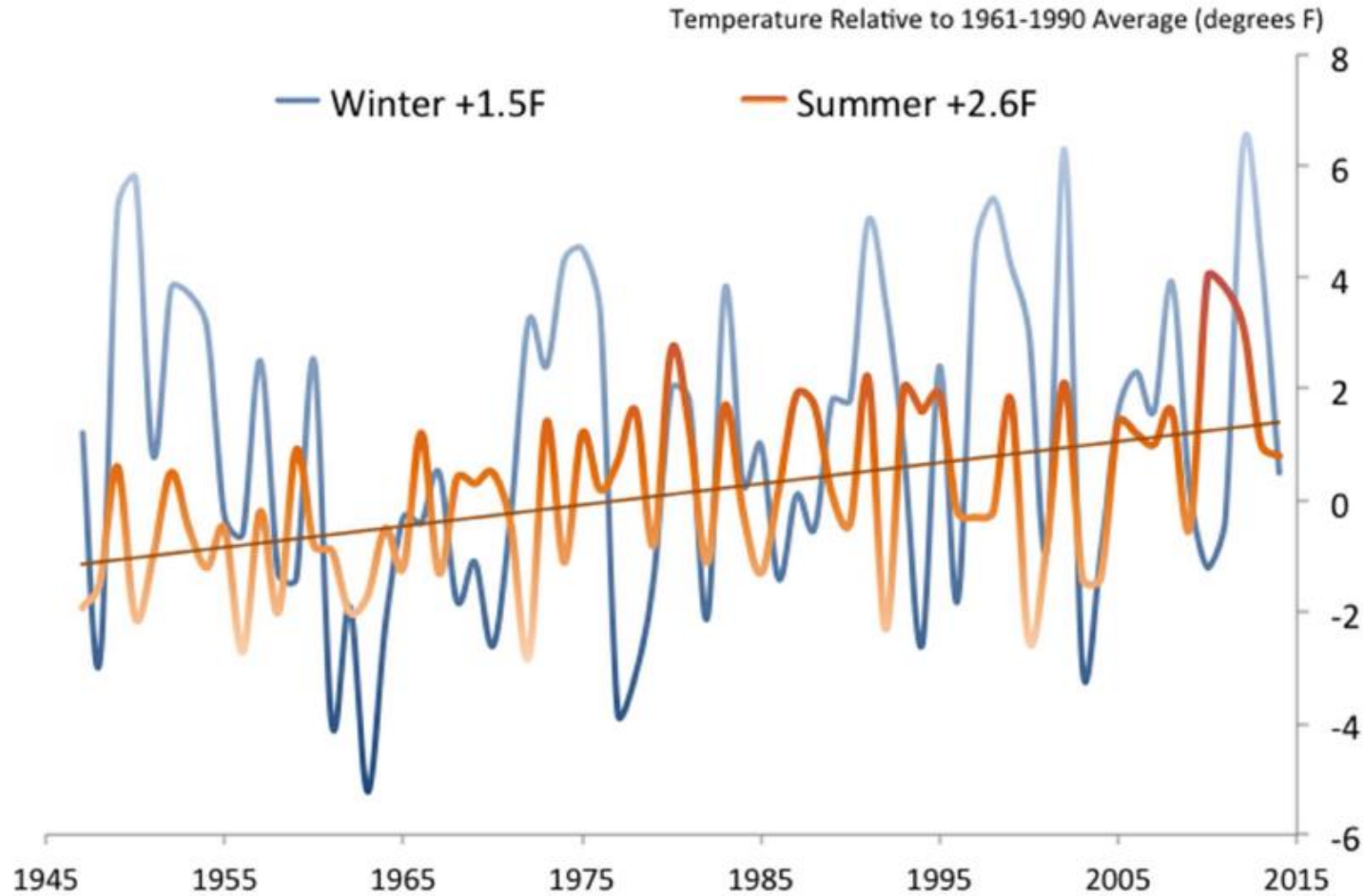


Part Two

# **HOW WILL CLIMATE CHANGE AFFECT DC?**



# DC is Warming



National Airport

**Both DC winters and summers are getting warmer**





**DC is already 10-15° hotter than surrounding rural areas**

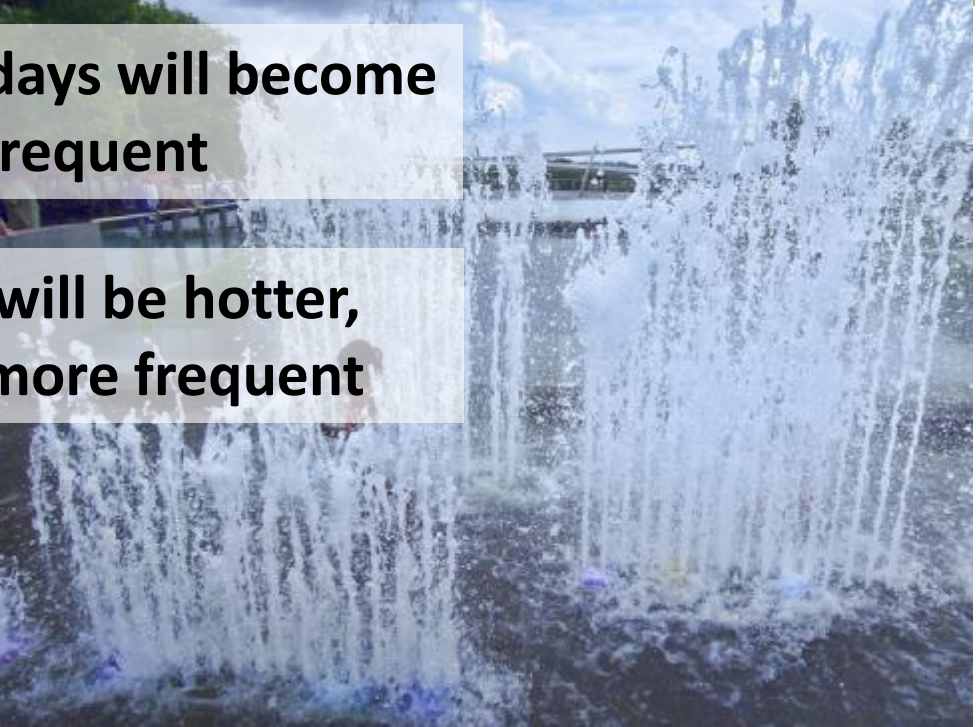


**Average summer temperatures are expected to increase up to 10° by the 2080s**



**Extremely hot days will become more frequent**

**Heat waves will be hotter, longer, and more frequent**





# Extreme Heat Events

## Days Over 95°F Heat Index

**Baseline**

June	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	1	2	3	4	5
July	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	1	2
	3	4	5	6	7	8	9
August	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						

**30**  
days

**2020s**

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

**50**  
days

**2050s**


1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						


**70-80**  
days

**2080s**

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6
7	8	9	10	11	12	13

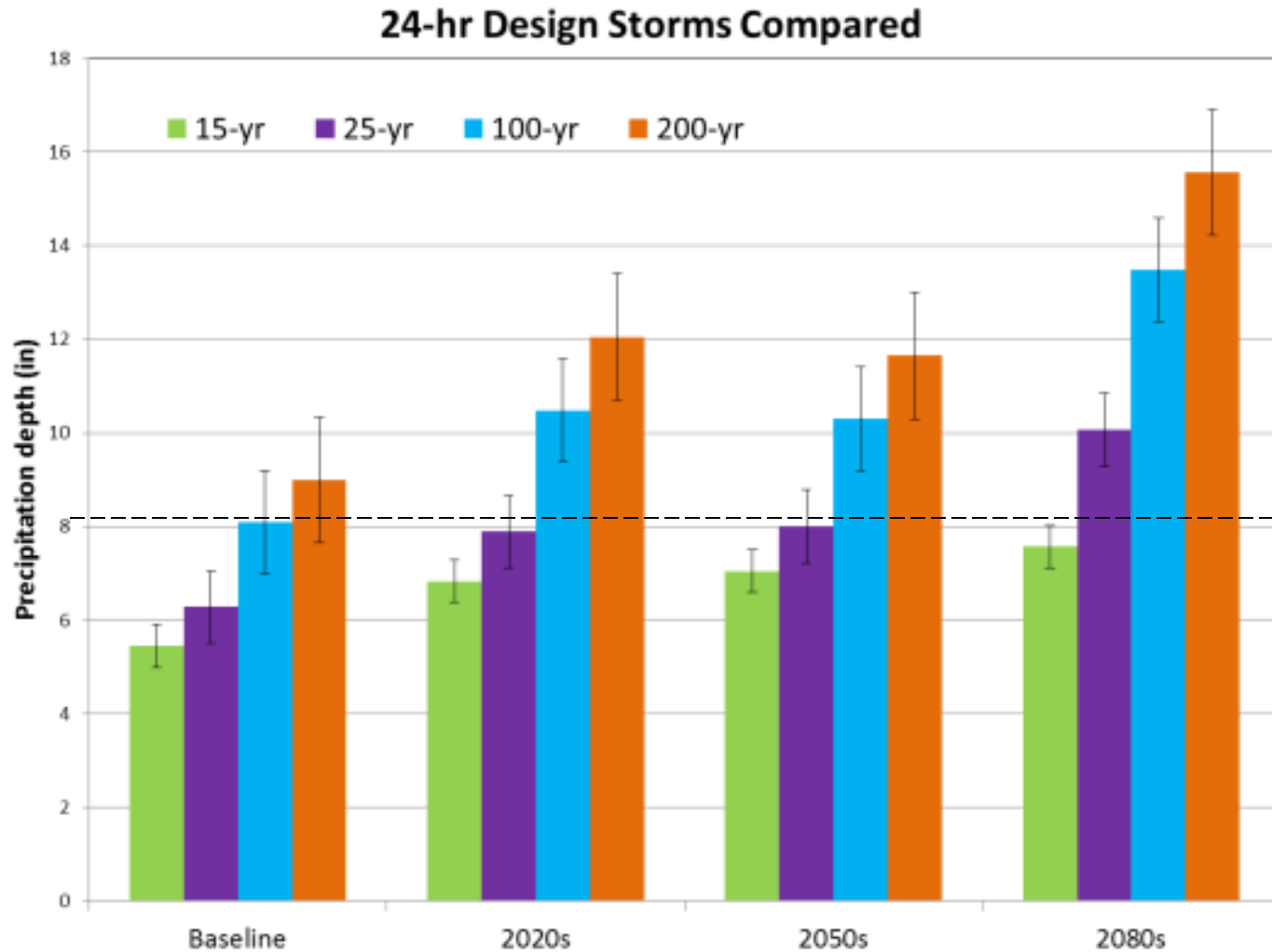
**75-105**  
days

 Days above 95°F Heat Index  
(low emission scenario)

 Days above 95°F Heat Index  
(high emission scenario)



# Extreme Precipitation Events



Today's  
100-year  
rain event  
(8 inches)

Extreme precipitation events, when a large amount of rain/snow falls in a short period of time are projected to become **more frequent** and **more intense**.



# Implications of More Severe Rain Events

## Example:

Drainage infrastructure is generally designed to handle rainfall from a 15-year event.

Historically, that meant 5.5" of rain.

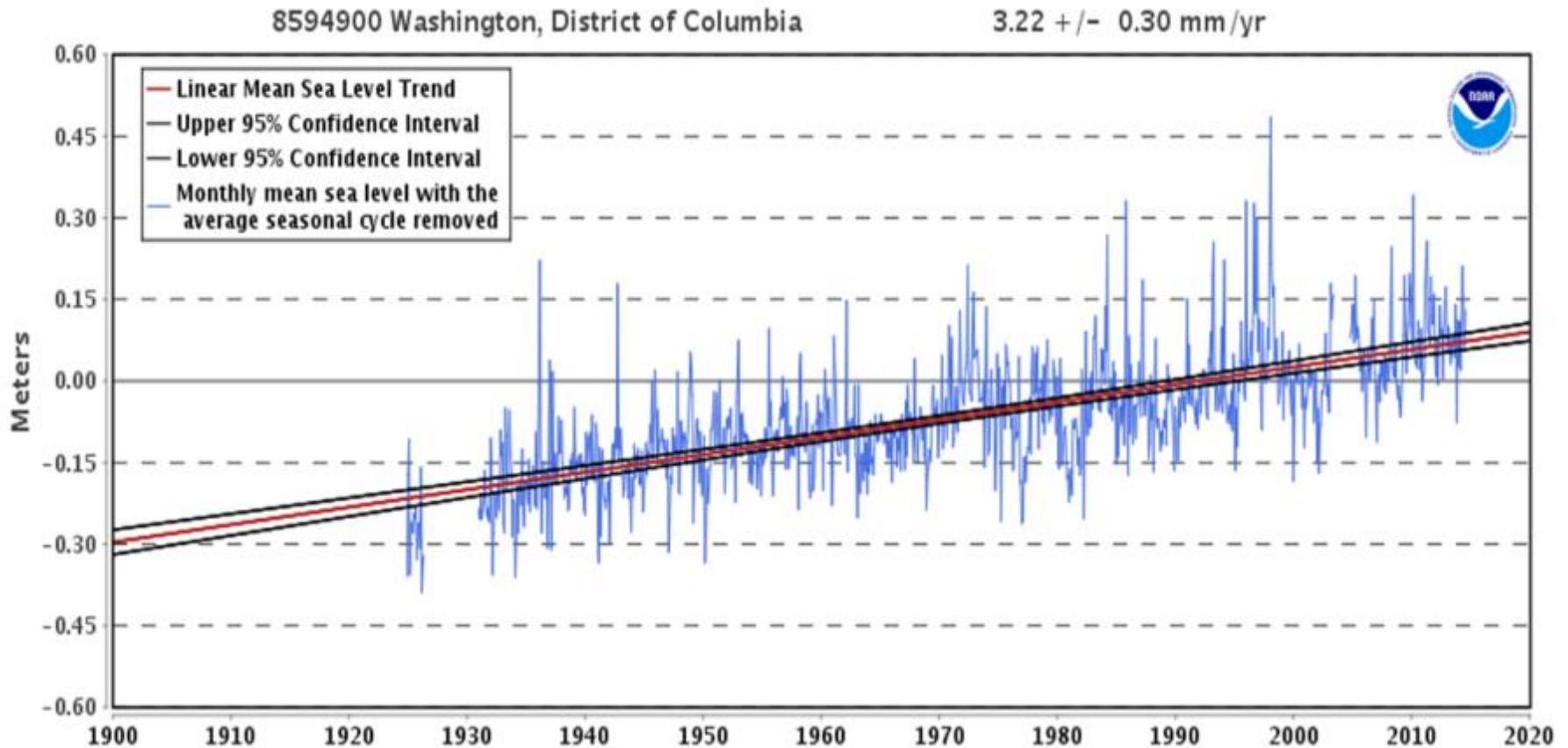
In the future, a storm with the same frequency will bring rainfall of:

- 6.8" in the 2020s
- 7.1" inches in the 2050s
- 8" inches in the 2080s





# Local Sea Level is Rising



Source: NOAA gauge 8594900 in Washington Channel

Local sea level has risen **11"** since 1924.



# Flooding is More Frequent

As a result of sea level rise, “nuisance flooding” days have increased by **373%** since the 1950s.



Source: NOAA

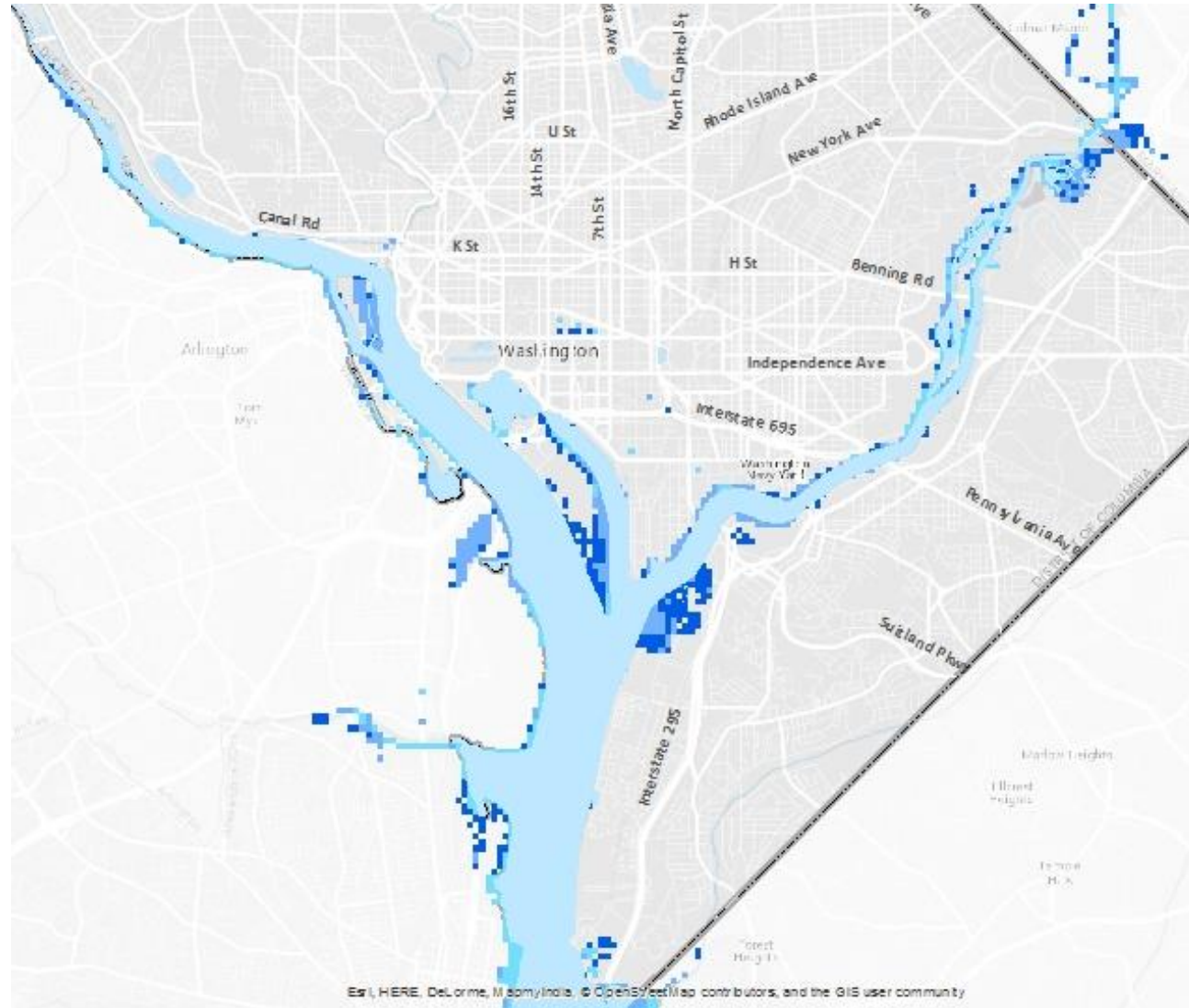


# Future Sea Level Rise

2020s: 2.4 inches

2050s: 1.4 feet

2080s: 3.4 feet





Part Three

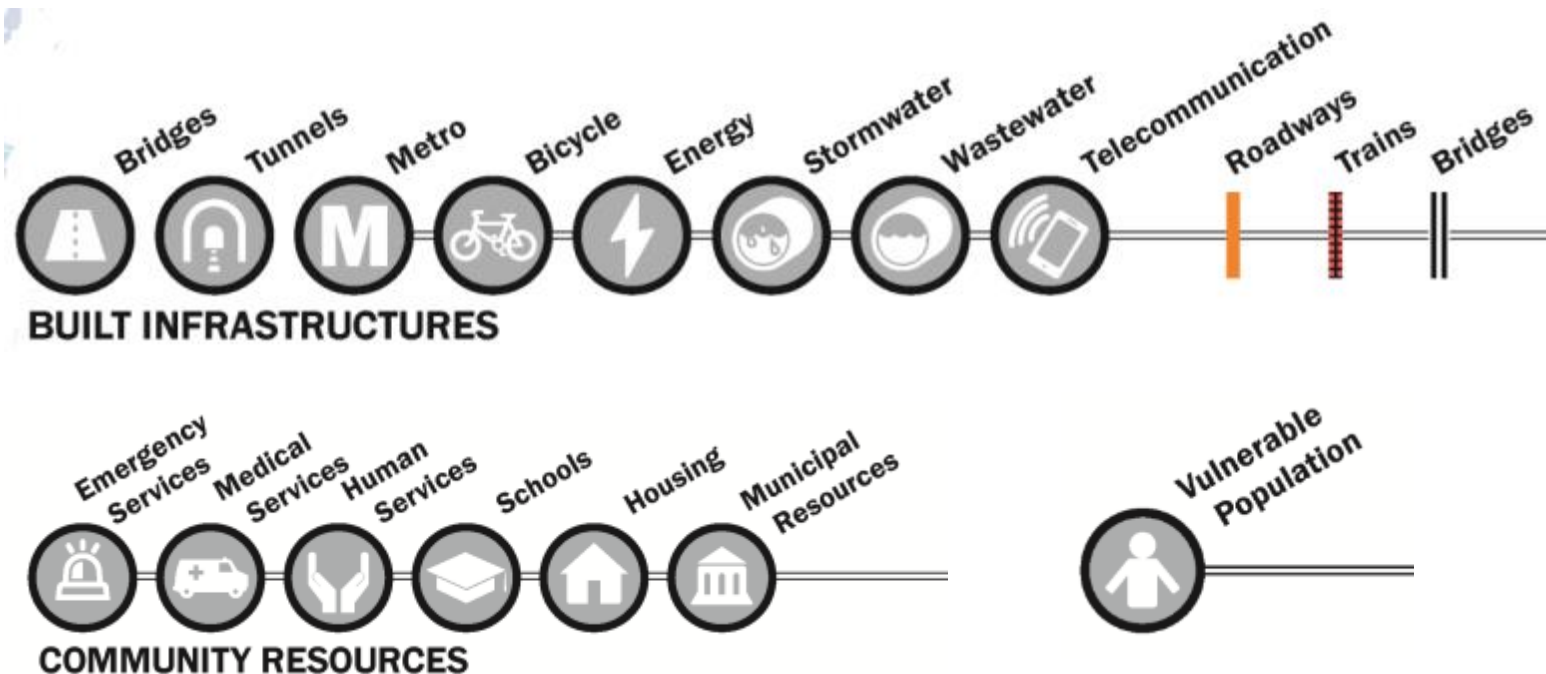
# **WHAT ARE THE RISKS FACING DC AS A RESULT OF CLIMATE CHANGE?**



# Vulnerability & Risk Assessment

Goal: Identify the District's infrastructure, public facilities, and populations at greatest risk to climate change.

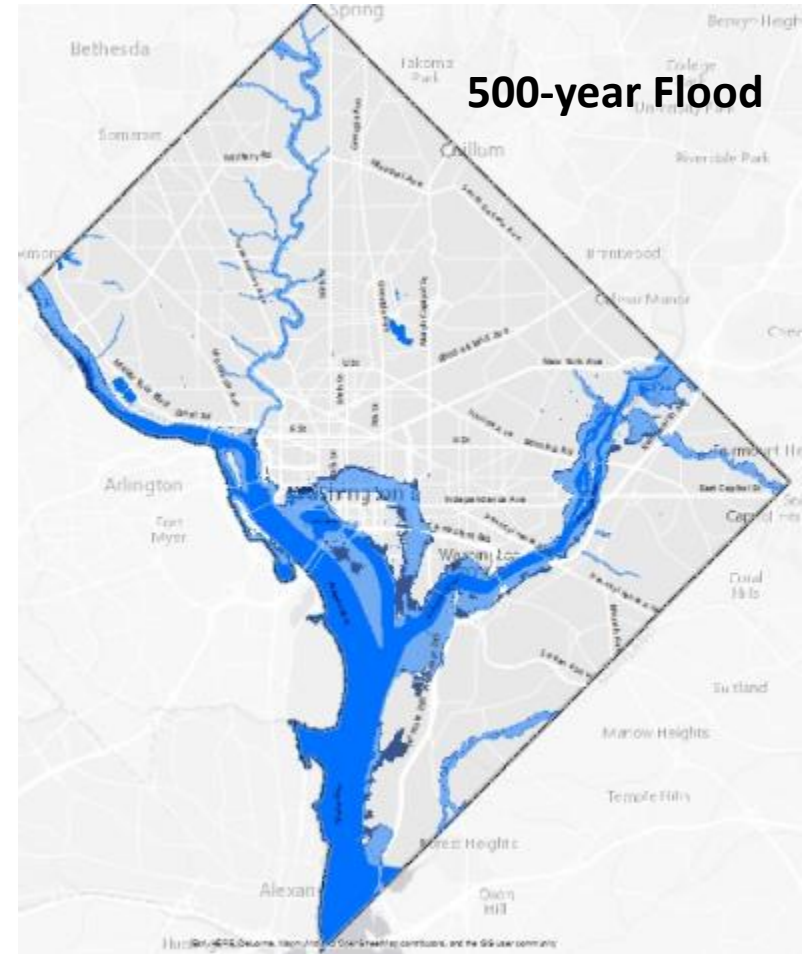
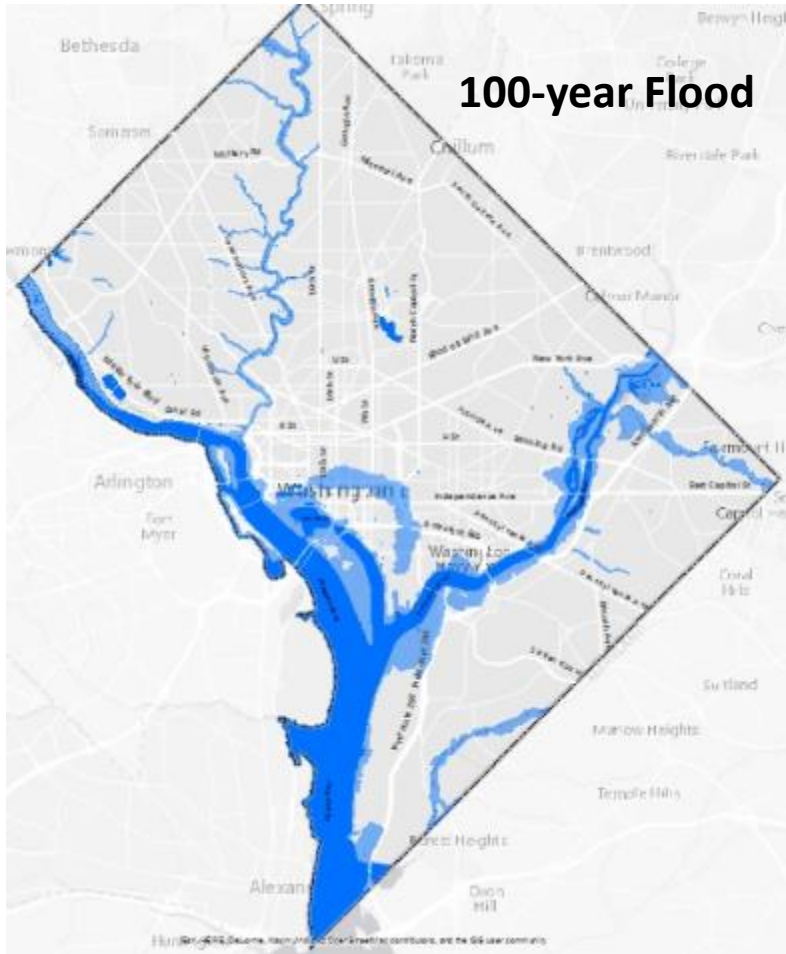
## Scope of Assessment





# Vulnerability & Risk Assessment

## Key Findings - Flooding

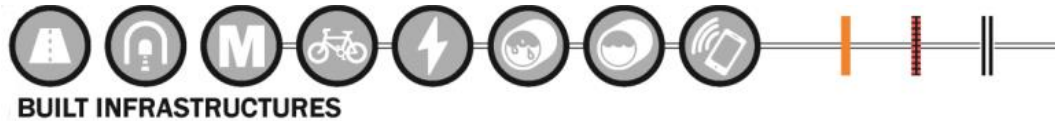


The combined impact of **increased precipitation**, **sea level rise**, and **storm surge** will require revisions to the current 100-year and 500-year floodplain boundaries to reflect increased flooding risks in the future.



# Vulnerability & Risk Assessment

## Key Findings



**Metrorail** is at-risk to increased heat and flooding.



Many **major roadways** are at risk to flooding, including designated evacuation routes.



**3 electric substations** are at risk to flooding, including 2 that are within or are abutting the 100 year-floodplain.

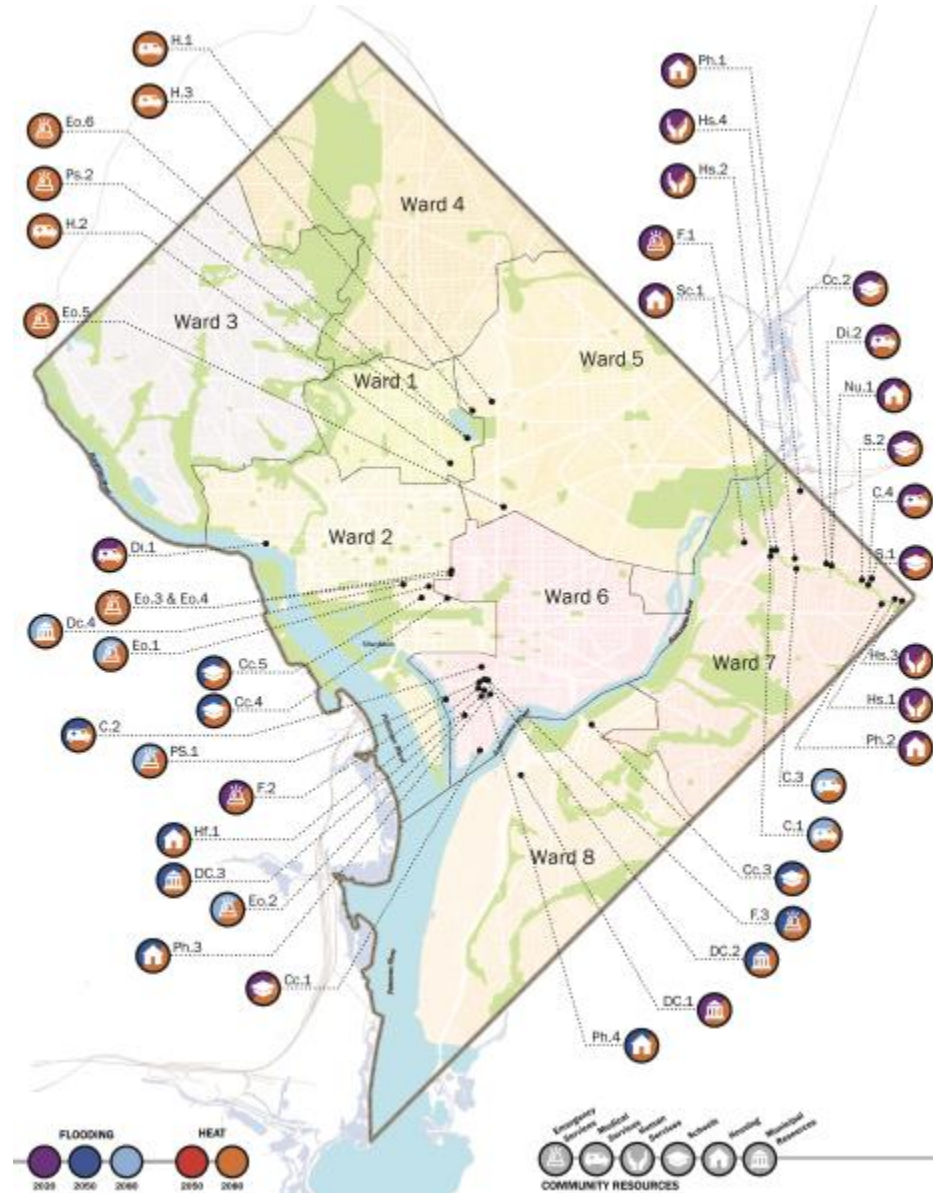


## Vulnerability & Risk Assessment



**Ward 7** is home to the largest number of vulnerable community resources such as schools, medical services and human services.

Public safety resources at risk of flooding, including police, fire, and local and federal emergency operations centers, are concentrated in **Downtown** and **Southwest**.





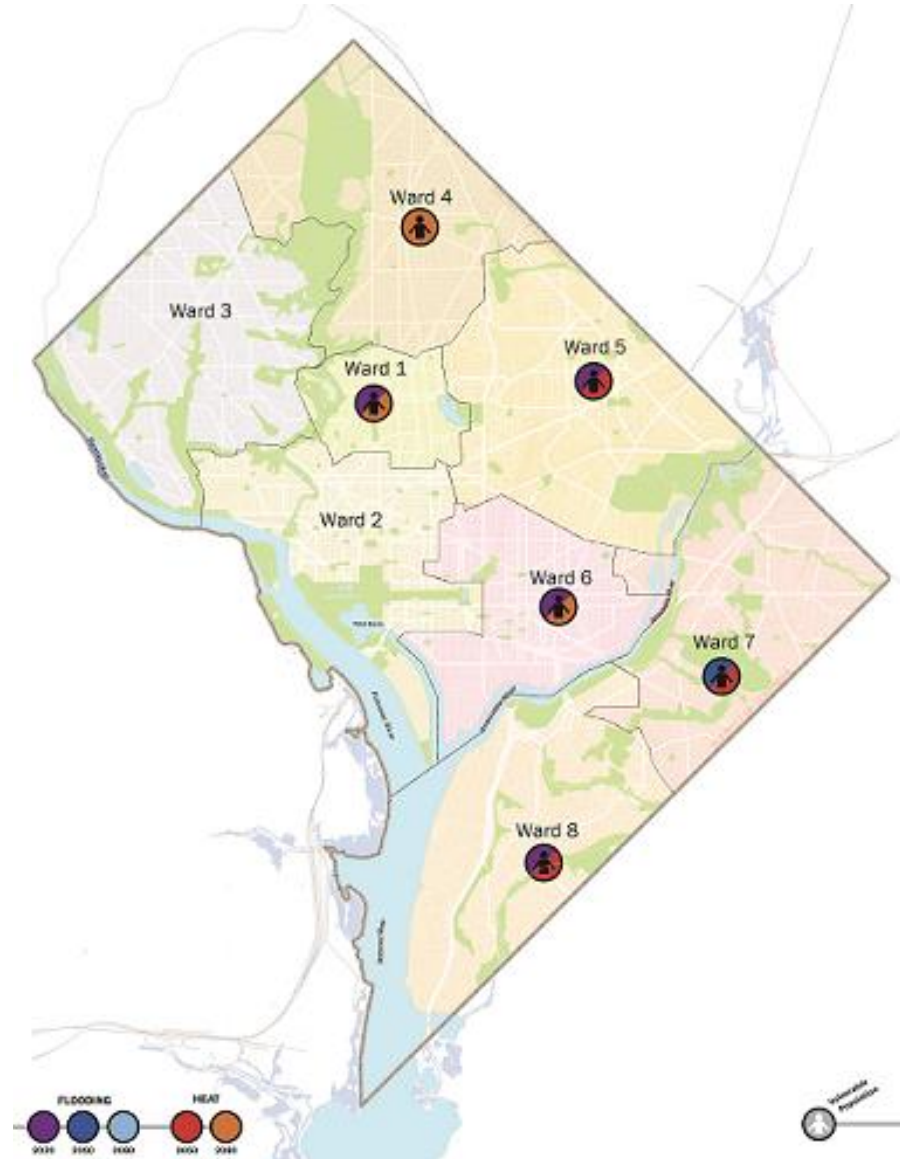
# Vulnerability & Risk Assessment

## Key Findings

### Vulnerable Populations



Wards 7 and 8 are home to the largest number of residents with a higher vulnerability to climate change impacts – especially an increase in extreme heat – due to economic and demographic factors (e.g. income, age, obesity, asthma, etc.)



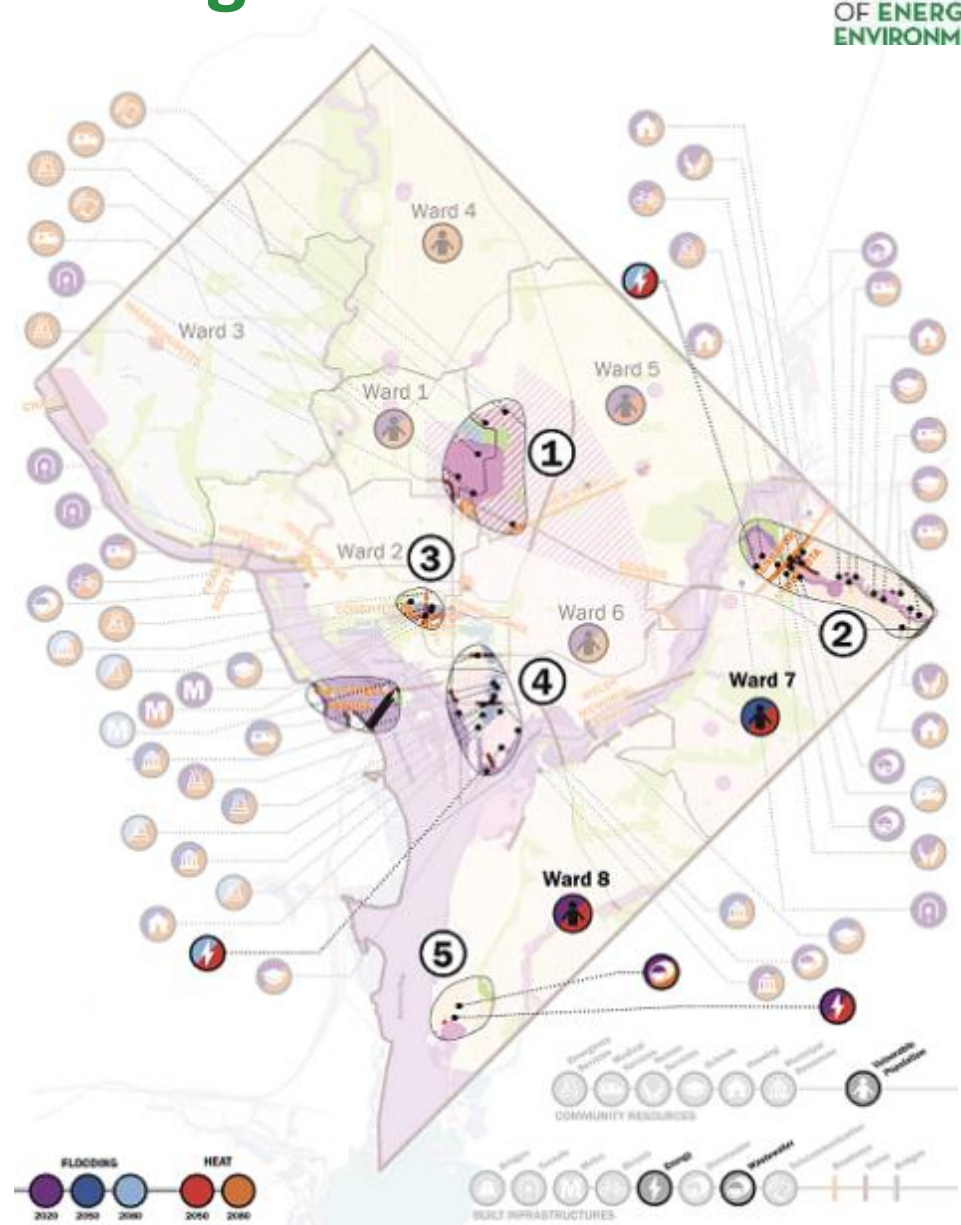


# Vulnerability & Risk Assessment Key Findings

## Priority Planning Areas

1. Bloomingdale & LeDroit Park
2. Watts Branch
3. Downtown/Federal Triangle
4. Southwest/Buzzard Point
5. Blue Plains

+Vulnerable Populations in Ward 7  
& Ward 8





Part Three

# **HOW CAN DC PREPARE FOR AND ADAPT TO A CHANGING CLIMATE?**



# Plan Organization

Transportation  
& Utilities

Buildings &  
Development

Neighborhoods  
& Communities

Governance &  
Implementation



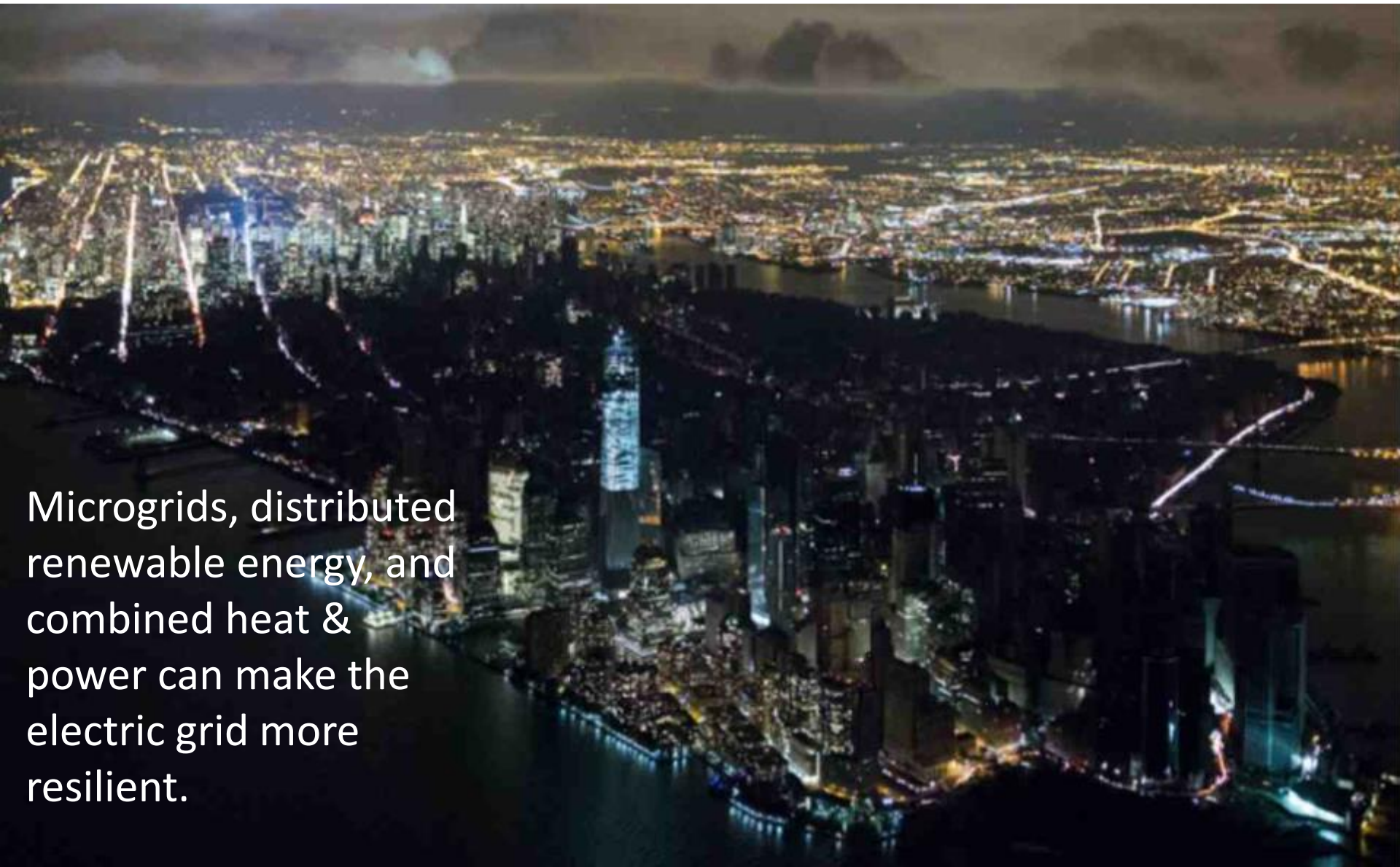
# TRANSPORTATION + UTILITIES

**Goal:** Improve transportation and utility infrastructure to maintain viability during periods of extreme heat, extreme weather, and flooding.

#	Action
TU 1.0	Develop site-level adaptation plans for all at-risk facilities.
TU 2.0	Increase the resilience of energy systems
TU 3.0	Increase the resilience of water systems
TU 4.0	Increase resilience of communication systems
TU 5.0	Increase resilience of transportation systems



# Adaptation Solutions



Microgrids, distributed renewable energy, and combined heat & power can make the electric grid more resilient.



# Adaptation Solutions



Flood proofing critical facilities like power substations and water pumping stations can prevent outages.



# BUILDINGS + DEVELOPMENT

**Goal:** Upgrade existing buildings and design new buildings and development projects to withstand climate change impacts.

#	Action
BD 6.0	Provide back-up power for emergencies at all identified critical facilities
BD 7.0	Improve thermal safety of buildings during extreme heat events
BD 8.0	Pursue deep energy and water efficiency for all buildings
BD 9.0	Incorporate climate resilience into development planning and review
BD 10.0	Leverage land-use planning to promote resiliency
BD 11.0	Provide incentives to private property owners and developers for flood resilience



# Adaptation Solutions

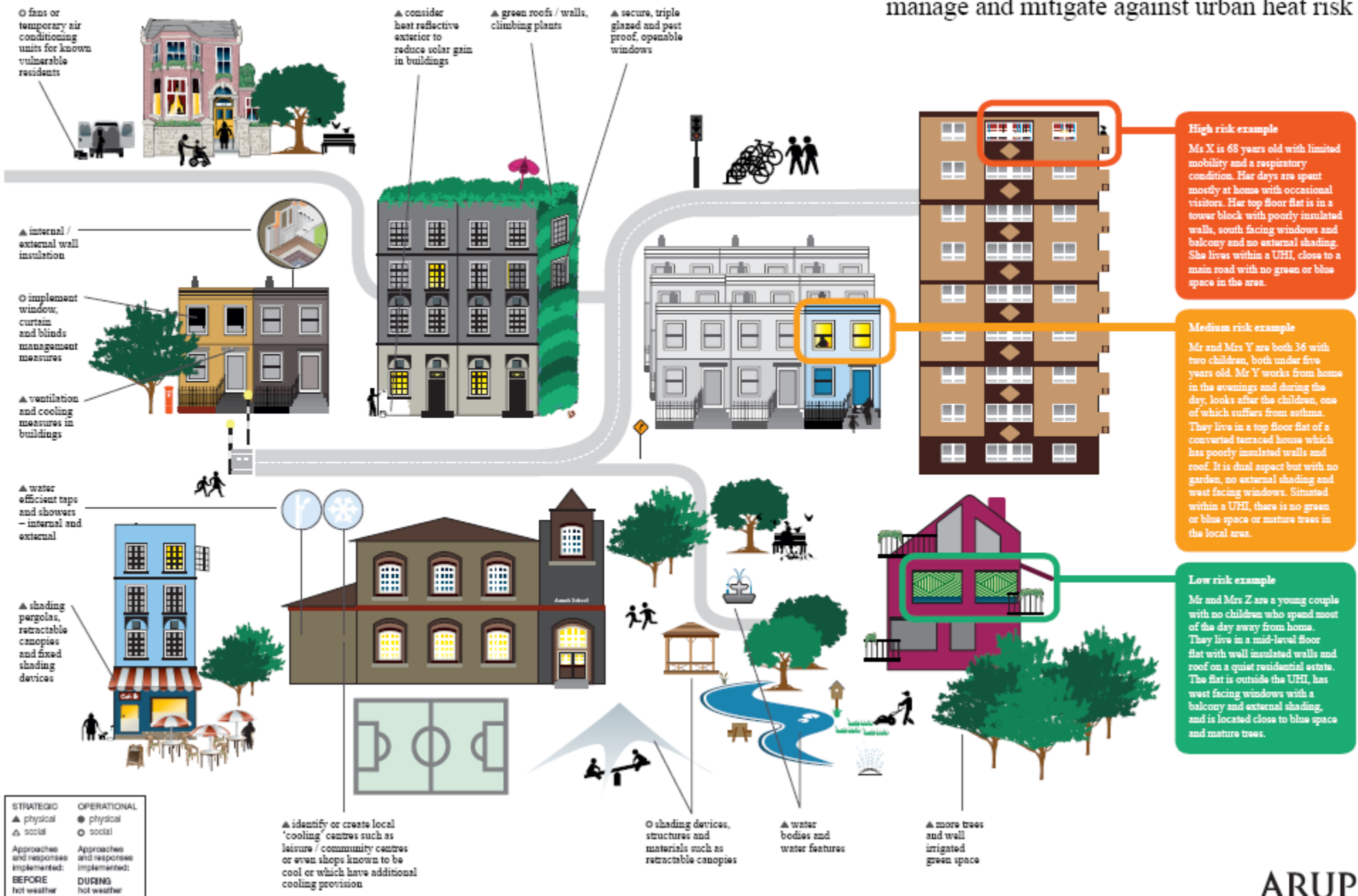


Cool roofs, trees, light colored pavement, and green space can reduce urban heat island impacts and save lives.



# Adaptation Solutions

Summary of approaches and responses to manage and mitigate against urban heat risk





# NEIGHBORHOODS + COMMUNITIES

**Goal:** Make neighborhoods and communities safer and more prepared by strengthening community, social, and economic resiliency.

#	Action
NC 12.0	Improve emergency preparedness and planning related to climate change
NC 13.0	Reduce risks of extreme heat and the urban heat island
NC 14.0	Strengthen Community Cohesion for Safety + Resilience
NC 15.0	Develop Eco-Resiliency District and Community Resilience Hubs



# Adaptation Solutions



Build capacity for **community level** preparedness and resilience planning.

The **Evacuteer** organization in New Orleans, in partnership with the city, recruits, trains, and manages evacuation volunteers who assist with New Orleans' emergency response efforts.



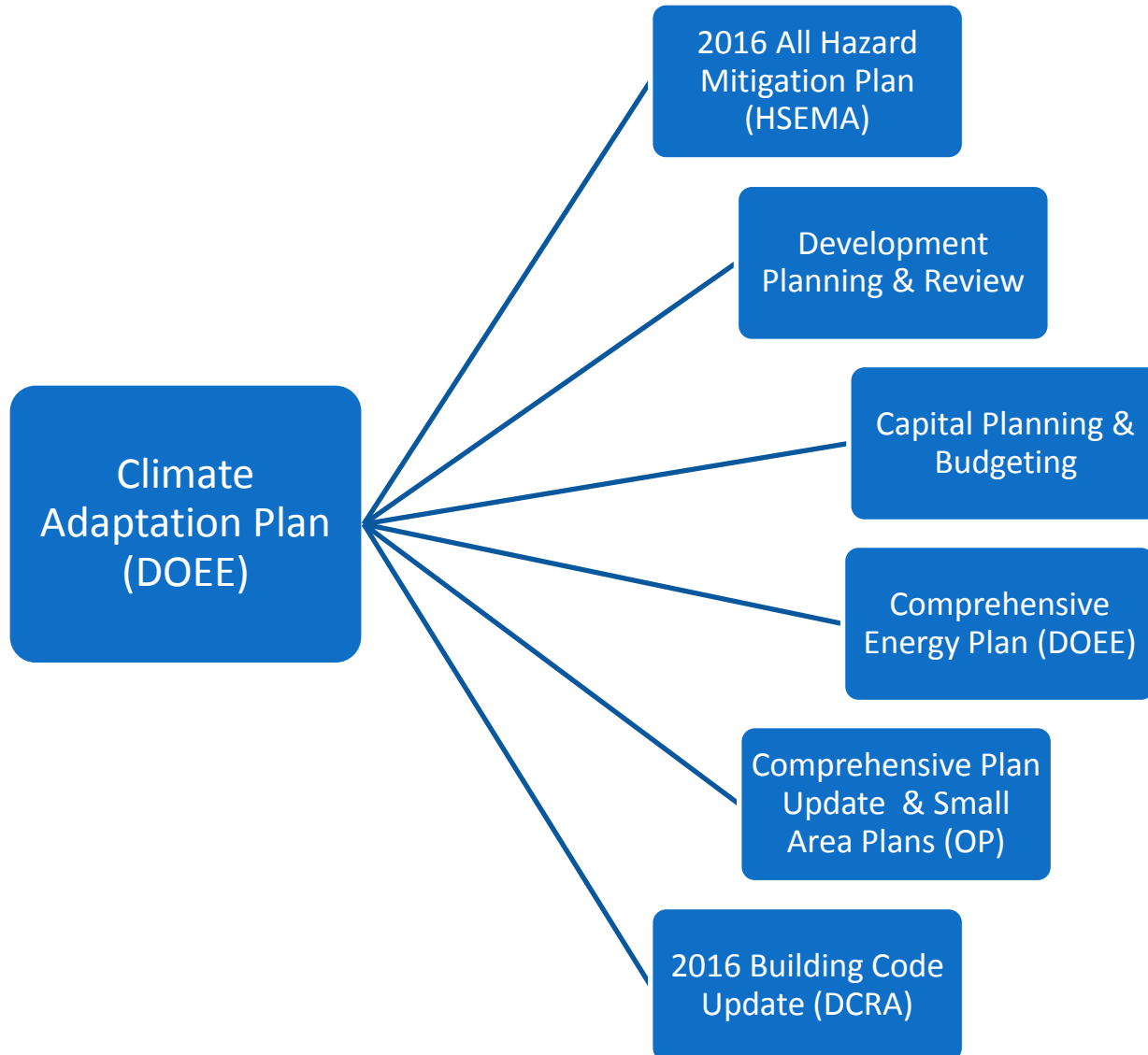
# GOVERNANCE + IMPLEMENTATION

**Goal:** Establish the policies, structures, and monitoring and evaluation procedures to ensure successful implementation of the adaptation plan.

#	Action
GI 16.0	Continue to analyze climate vulnerability to account for latest science
GI 17.0	Integrate Climate Ready DC into related planning efforts
GI 18.0	Establish the necessary structures to ensure successful implementation



# Opportunities for Implementation & Integration

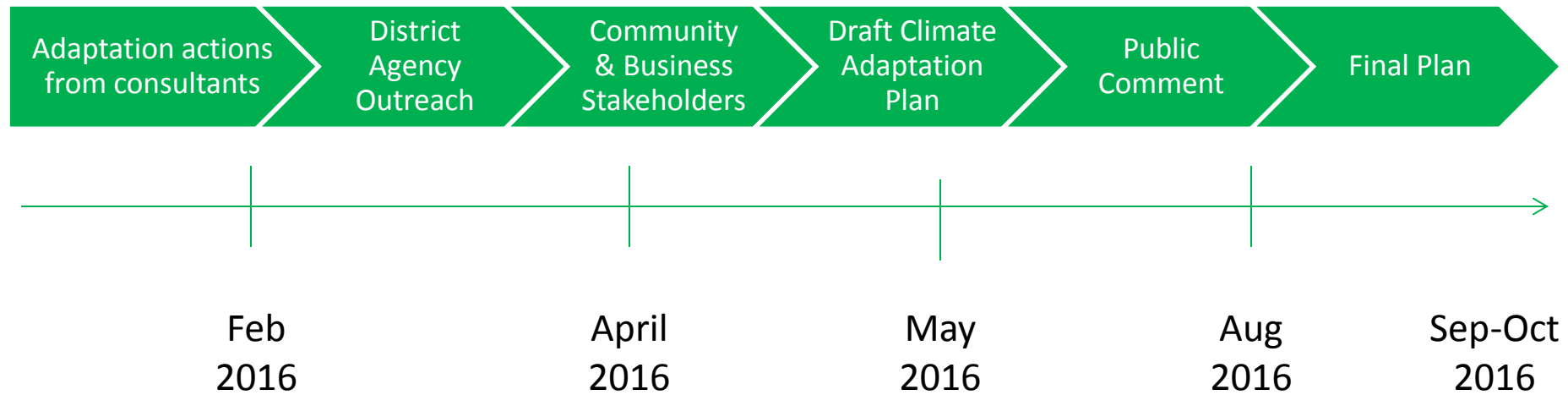




**NEXT STEPS**



# Schedule





**QUESTIONS?**



# Contact



**Kate Johnson**

**Phone:** 202-299-3355

**Email:** [katherine.johnson@dc.gov](mailto:katherine.johnson@dc.gov)