THE DISTRICT OF COLUMBIA
COMMISSION ON CLIMATE CHANGE & RESILIENCY

TRANSMITTAL LETTER

The Honorable Muriel Bowser, Mayor of the District of Columbia
The Honorable Phil Mendelson, Chairman, Council of the District of Columbia

1350 Pennsylvania Avenue NW
Washington, DC, 20004

November 17, 2022

Dear Mayor Bowser and Chairman Mendelson:

Pursuant to the Commission on Climate Change and Resiliency Establishment Act of 2016 (D.C. Law 21-185), the Commission on Climate Change and Resiliency is pleased to submit our Second Report.

This report affirms the substantial progress made by the District of Columbia to both mitigate and adapt to climate change and identifies new opportunities for future action. Since issuing our first report in October 2019, the Commission has convened regular public meetings to track progress, identify gaps and clarify challenges. We advance these recommendations in the spirit of the unprecedented urgency needed to respond to the global climate crisis, and in a way which builds on the District's existing science-based actions, many of which have been recognized globally as innovative.

The Commission has organized its work into the three themes of adaptation, mitigation, and engagement. Our most prioritized findings include the following:

- **Accelerate the Transition to Clean Energy**. To achieve carbon neutrality goals, the District must electrify buildings and transportation, increase renewable energy, and ensure that regulatory, legislative, and executive actions further our progress.
- **Anticipate and Prepare For Rapidly Growing Climate-related Risks**. The District must anticipate greater intensity and frequency of climate-related hazards impacting all District residents, workers, and tourists, including extreme weather, heat waves, flooding, and storms, which disproportionately impact vulnerable persons, communities, and neighborhoods.
- **Empower All Communities.** The District should invest in community-led solutions and further capacity to build stronger partnerships across public and private sectors to dramatically increase community-led decisions through climate education resources and workforce development to meet the needs of the District's climate preparedness and greening economy.

The District is widely recognized for its vision and leadership in addressing the threat posed by climate change. We are building a better future by reducing our vulnerabilities and eliminating our contribution to this global crisis. This report seeks to strengthen our capacity to innovate an equitable, resilient, and sustainable Washington, DC, as we collectively advance through this unprecedented transition.

On behalf of the Commission, we are grateful for this opportunity to serve the District of Columbia.

Sincerely,

Uwe S. Brandes

Chair, Commission on Climate Change and Resiliency

Accelerate, Anticipate, Empower

SECOND REPORT

of the

District of Columbia
COMMISSION ON CLIMATE CHANGE & RESILIENCY

THE DISTRICT OF COLUMBIA
COMMISSION ON CLIMATE CHANGE & RESILIENCY

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ABOUT THE COMMISSION

The District of Columbia Commission on Climate Change & Resiliency was created by D.C. Law 21-185 to assess the impacts of the changing climate and potential impacts of adverse weather events, the District's ability to mitigate and adapt to climate change, and report on the status of the District's ability to prepare, plan for, absorb, recover from, and adapt to adverse events associated with climate change.

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Glossary

Acronym	Definition
District Agencies and Other Entities	
CCCB	Construction Codes Coordinating Board
DC-CCCR	D.C. Commission on Climate Change & Resilience
DCSEU	D.C. Sustainable Energy Utility
DOB	Department of Buildings
DOES	Department of Employment Services
DOEE	Department of Energy & Environment
DGS	Department of General Services
DPR	Department of Parks & Recreation
DCPL	District of Columbia Public Library
DDOT	District Department of Transportation
DCPS	District of Columbia Public Schools
HSEMA	Homeland Security & Emergency Management Agency
OCP	Office of Contracting and Procurement
OSSE	Office of State Superintendent of Education
PSC	Public Service Commission
YAAC	Youth Apprenticeship Advisory Committee
District Plans	
CEDC	Clean Energy DC
CFDC	Carbon Free DC
CRDC	Climate Ready DC
KCDC	Keep Cool DC
MDC	MoveDC
RDC	Resilient DC
SDC	Sustainable DC 2.0
TER	Transportation Electrification Roadmap

Term	Definition
Jargon	
Standard Offer Service	The Standard Offer Service is the default electricity supply provided by Pepco for customers that do not select an electric supplier or wholesale power purchase agreement.
Medium- and Heavy-Duty Vehicles	Medium- and heavy-duty (MHD) refers to vehicles with a gross vehicle weight rating (GVWR) greater than or equal to 8,500 pounds (3,860 kilograms) regardless of how they are powered. (https://www.epa.gov/emission-standards-reference-guide/vehicle-weight-classifications-emission-standards-reference)
100-Year Floodplain	The land area projected to be inundated by a flood with a statistically estimated 1% chance of being equaled or exceeded in any given year.
100-Year Rain Event	A rainfall with statistically estimated 1% chance of being equaled or exceeded in any given year. As intense rain events become more frequent, the threshold for 1% likelihood rain events increase.
Fossil Gas	Fossil gas is often called 'natural gas' by industry and others. However, this term obscures the fact that it is a fossil fuel, which is extracted from petroleum wells and burned in power plants and appliances, emitting greenhouse gases and other pollutants. To ensure that this is understood by readers of this report, we use the term 'fossil gas' throughout
Renewable Portfolio Standard	A legislated requirement that prescribes the percentage of electricity from renewable sources, which utilities report annually to the Public Service Commission

Executive Summary

This is the second legislatively mandated report from the District of Columbia Commission on Climate Change & Resiliency (Commission) to the Mayor and the Council of the District of Columbia. The report affirms the substantial progress made by the District in its efforts to mitigate and adapt to climate change and identifies new opportunities for future action. Since issuing our first report in October 2019, the Commission has convened quarterly public meetings to assess progress, identify gaps, and clarify challenges. The Commission advances these recommendations in the spirit of building on the many leading policies and practices being advanced by the District.

The Commission has organized its recommendations into three subject-matter areas:

CLIMATE MITIGATION:

Reducing the District's contribution to global greenhouse gas emissions;

CLIMATE ADAPTATION:

Preparing the District for the impacts of climate change; and

COMMUNITY ENGAGEMENT:

Distributing knowledge, resources, and decision-making power to District residents and stakeholders to equitably accomplish the District's climate goals.

SOCIAL EQUITY: A THROUGHLINE FOR ALL CLIMATE ACTIONS

The District must continue to center equity and environmental justice in all facets of its climate investments, policies, and programs. The burdens and impacts of climate change are not and will not be shared equally among District residents. Communities that have historically been discriminated against and denied investment are more vulnerable to climate impacts. For example, because climate change will worsen air pollution and exacerbate respiratory illnesses, communities in the District that already experience high rates of asthma and health disparities, most of which are Northeast and Southeast quadrants, will be disproportionately impacted by rising temperatures. While climate change will affect everyone in the District, it is imperative that government actions prioritize areas that are most vulnerable.

COMMISSION FINDINGS

CLIMATE MITIGATION

The District continues to reduce its contribution to global greenhouse gas emissions, having achieved a cumulative reduction of 40% since 2006. **The District recently reset its ambitious target to achieve carbon neutrality from 2050 to 2045.** In the context of a growing region with sustained long-term demand for new housing, the District's emphasis on affordable, transit-oriented, multi-family housing production is itself one of the most strategic and impactful climate mitigation strategies that is being advanced. **However, many significant implementation challenges remain**, such as a comprehensive strategy to decommission fossil gas,[1] often referred to as "natural gas" by the oil and gas industry. Greater leadership and accountability among utilities and utility regulators is necessary to ensure that the District meets legislated carbon neutrality goals.

CLIMATE ADAPTATION

Increasing frequency and intensity of flood events and extreme heat days are already adversely impacting District residents. District residents are confronting increased frequency and intensity of precipitation and storm-driven flood events, rising sea levels that compound flood risks, higher average summer temperatures, and more extreme heat days. Even in an unlikely scenario of globally reduced greenhouse gas emissions, the District will still endure intensifying climate impacts through the 21st century and beyond, due to the delayed nature of carbon impacts in the atmosphere.

COMMUNITY ENGAGEMENT

Residents, communities, and businesses must be empowered to make decisions, catalyze new investments and promote new behaviors. The District should facilitate community-centered models of governance, cross-sector partnerships, increased data publicity, and education. An empowered community is more likely to pursue enduring solutions on a path to a green and resilient future.

1 Fossil gas is often called 'natural gas' by industry and others. However, this term obscures the fact that it is a fossil fuel, which is extracted from petroleum wells and burned in power plants and appliances, emitting greenhouse gases and other pollutants. To ensure that this is understood by readers of this report, we use the term 'fossil gas' throughout.

COMMISSION RECOMMENDATIONS

ACCELERATE THE TRANSITION TO CLEAN ENERGY

To achieve carbon neutrality goals, the District must electrify buildings and transportation, increase renewable energy, and ensure that regulatory, legislative, and executive actions further our progress.

1. Phase out fossil gas for commercial and residential buildings;
2. Increase proliferation of renewable energy on the electricity grid;
3. Advance the efficiency and electrification of the transportation system; and
4. Establish greater accountability and integrated coordination on climate actions.

ANTICIPATE RAPIDLY GROWING CLIMATE-RELATED RISKS

The District must anticipate greater intensity and frequency of climate-related hazards impacting all District residents, workers, and tourists, including extreme weather, heat waves, flooding, and storms, which disproportionately impact vulnerable persons, communities, and neighborhoods.

5. Better incorporate flood preparedness in standard practices;
6. Mitigate the impacts of extreme heat; and
7. Advance resilience and preparedness for residents and businesses.

EMPOWER ALL COMMUNITIES

Climate solutions must be tailored to address community needs. The District should invest in community-led solutions and further develop the capacity to build strong partnerships across public and private sectors to dramatically increase community-led decisions through climate education resources and workforce development to meet the needs of the District's climate preparedness and greening economy.

8. Expand public communications and education programs;
9. Establish resilience hubs across the District with community-based leadership;
10. Expand workforce development for a green economy; and
11. Foster new partnerships in technology and innovation.

Table 1: DC Commission on Climate Change and Resiliency Recommendations

Chapter	Recommendation	Proposed Action	Implementer
Mitigation	1. Phase Out Fossil Gas in Commercial and Residential Buildings	1.1 The District must initiate an orderly transition off fossil gas.	Council, PSC, DOEE, DCSEU
		1.2 Mandate electric replacement appliances for existing buildings	Council, DOB, CCCB, DCSEU
	2. Increase Proliferation of Renewable Energy Sources on the Electricity Grid	2.1 Council should increase oversight of PSC's role in renewable procurements	Council, PSC
		2.2 Accelerate equitable grid modernization for renewable deployment	PSC, Council, DOEE
	3: Advance the Efficiency and Electrification of the Transportation System	3.1 Expand DDOT's ongoing efforts to shift travel modes away from single occupancy vehicles.	DDOT, Council
		3.2 Prioritize emission reduction of medium- and heavy-duty vehicles	DOEE, DDOT, PSC
		3.3 Accelerate vehicle electrification charging capacity and infrastructure in coordination with utilities, and with consideration for multifamily and low income families	Council, DOEE, OCP
	4. Establish Greater Accountability and Integrated Coordination on Climate Actions	4.1 The District needs increased oversight for the achievement of legislated climate targets	Council
		4.2 Minimize the role of offsets and ensure quality of offsets	DOEE
		4.3 Develop new protocols and policies to address embodied carbon emissions	Council, DOB, DOEE, CCCB
Adaptation	5. Better Incorporate Flood Preparedness in Standard Practices	5.1 Dedicated funding sources for the DC Flood Task Force recommendations	Council
		5.2 Establish regulatory design standards for future climate conditions	Council, DOEE, DC Water, DOB, DDOT
	6. Mitigate the Impacts of Heat	6.1 Develop a workforce safety plan, including pay for disrupted workforce due to lost hours	Council, Office of the Mayor
		6.2 Direct substantial funding to implementation of the Keep Cool DC Strategy	Council
		6.3 Leverage District properties for innovative "cool design" strategies.	DGS, DPR, DL, OSSE, DOEE
	7. Advance Resilience and Preparedness for Businesses and Residents	7.1 Require critical service entities, agencies, and businesses to have a COOP and/or Emergency Management Plan	HSEMA, Council
		7.2 Increase preparedness and recovery support resources to increase individual and community resilience	HSEMA, DOEE
Engagement	8. Expand Climate Communication and Education	8.1 The executive branch should develop a coordinated communications strategy to deliver integrated climate change messaging to ensure consistency across agencies	Office of the Mayor, DOEE
		8.2 Evaluate a climate education curriculum for District of Columbia Public Schools (DCPS) and District of Columbia Public Charter School Board (DCPSB)	OSSE, DCPS, DOEE
		8.3 Engage non-English speaking communities and ensure materials are available in multiple languages	DOEE, Office of Language Access
		8.4 Leverage existing Environmental Justice screening tools, such as the Climate and Economic Justice Screening Tool (CEJST)	DOEE, Office of Mayor
	9. Establish Resilience Hubs Across the District with Community-Based Leadership	9.1 The District should identify a responsible agency and develop clear policy, protocols, and best practices to expand resilience hubs across the District.	HSEMA, DOEE, DPR
		9.2 Resilience hubs should hire and collaborate with community-based organizations	HSEMA, DOEE, DPR
	10. Expand Workforce Development for a Green Economy	10.1 DOEE and partners should expand green job development programs and incorporate them into the District's climate action plan, Clean Energy DC.	DOEE, DOES, YAAC, Build Green DMV, DC SEU
		10.2 DOEE and partners should improve the availability and accessibility of apprenticeship programs	DOEE, DOES, YAAC, Build Green DMV, DC SEU
		10.3 DOEE and DOES should improve data collection and dissemination on job training and pathway programs related to climate.	DOEE, DOES, YAAC, Build Green DMV, DC SEU
	11. Foster New Partners in Technology and Innovation	11.1 Highlight market and technology innovation by providing a platform for investors, experts, and innovators	DC-CCCR
		11.2 Encourage collaborative partnerships between District agencies, community based organizations, and the private sector to better foster holistic climate solutions.	DC-CCCR

The members of the Commission on Climate Change and Resiliency (Commission) serve the residents of the District of Columbia by exploring the ways in which climate change can act as a catalyst for our city to become more equitable, resilient, and sustainable. The Commission brings an independent lens to this challenge, and we are heartened by the many positive and innovative activities already underway in our city. However, we are mindful of the great urgency with which we must collectively mobilize to mitigate and prepare for climate change.

The Mayor and the Council of the District of Columbia (Council) appoint members to the 16 seats on the Commission. Per D.C. Law 21-185, the Commission meets publicly on a quarterly basis and produces an independent report to the Mayor and the Council every three years. Beyond our legislatively mandated responsibilities, the Commission coordinates with public agencies and engages other organizations and members of the public.

COMMISSION ACTIVITIES

- **Quarterly Public Meetings:** The Commission conducted quarterly public meetings featuring presentations from many District agencies, including Department of Energy and Environment, Homeland Security and Emergency Management Agency, Department of General Services, Office of Planning and other non-agency entities such as DC Water, Pepco, and the Public Service Commission. Presentations from international experts included the World Resources Institute, the Urban Land Institute, the United States Green Building Council, and CDP (Carbon Disclosure Project).

- **Ongoing Consultation:** Individual members of the Commission have engaged multiple agencies in strategic planning and consultation, including the Office of the People's Counsel, the Federal City Council, the DC Policy Center the DC Flood Task Force, and the Maryland-DC Association of Utilities. Collaboration with agency staff and stakeholders heightened the awareness and significance of climate initiatives through the District.

- **Knowledge Forum**: In January 2022, the Commission hosted a public forum which convened thought leaders from academia, advocacy organizations, and public agencies. The proceedings from the forum have been archived and are publicly available on our website. This forum was conducted as a component of our due diligence in preparation of our Second Report to the Mayor and the Council.

- **Letters & Public Comments:** The Commission reviews draft plans and proposed climate-related actions by public agencies and provides annual testimony to the DC Council.

The Commission's charge is to provide an independent and long-term perspective regarding the District's actions to reduce greenhouse gas emissions and adapt to a changing climate. The District has made great strides on climate action, including promulgation of emissions reduction targets and plans, implementation of the Building Energy Performance Standards, and the creation of a Resilience Hub pilot, all in addition to the long-standing commitment to create mixed-use, mixed-income, and transit-oriented communities. However, more work is needed to ensure the District achieves its climate goals in emissions reduction and community preparedness. The Commission presents this report and its recommendations in furtherance of the District's commitment to addressing the climate crisis.

The Intergovernmental Panel on Climate Change recently reported that global greenhouse gas emissions continue to rise, with the 2010's recording a higher average annual GHG emissions rate compared to all previous decades. As a result, the U.S. Global Change Research Program reports that climate change and its associated impacts resulted in the nation's warmest decade on record.[2] The same report highlights that sea level rise rates in the Mid-Atlantic region were three to four times higher than the global average rate due to land subsidence, leading to an increase in the frequency of coastal flooding.[3] Without immediate reductions in emissions, the changes to the global climate will be irreversible.[4]

SOCIAL EQUITY AND CLIMATE CHANGE

Age, income, sexual orientation, education, English proficiency, race, and gender identity are among the social attributes that can impact residents' access to the suite of services, benefits, and opportunities in the District.[5] For this report, neighborhoods with high concentrations of individuals with social characteristics that have a history of marginalization or disenfranchisement are identified as "disadvantaged communities." The term "disadvantaged community" also applies to individuals with a common experience or condition regardless of geographic proximity, such as migrant workers.[6]

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2 USGCRP, 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment.* [Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, (eds)]. U.S. Global Change Research Program, Washington, DC 841 pp. doi:10.7930/J0Z31WJ2.

3 USGCRP, 2018: I*mpacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, 1515 pp. doi: 10.7930/NCA4.2018.

4 IPCC, 2022: Summary for Policymakers. In: Climate Change 2022: *Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.001. https://www.ipcc.ch/report/ar6/wg3/resources/spm-headline-statements.

5 *DC Racial Equity Profile.* (accessed September 2022). Council Office of Racial Equity. https://www.dcracialequity.org/dc-racial-equity-profile.

6 *Interim Implementation Guidance for the Justice40*. (July 20, 2021). U.S. Office of Management and Budget. https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf.

Among the social, personal, and economic characteristics of marginalization, racial disparities in the District are the most pervasive.[7] While the District has seen growth in population, economic prosperity, and labor markets, Black residents experience lower rates of homeownership and lower rates of college completion which represents a significant barrier to large portions of the District's job market. Black residents are also more likely to experience poverty and health risks, such as asthma or chronic obstructive pulmonary disease (COPD). This misalignment of needs and opportunities is the result of many factors, including the long-term legacies of systemic and structural racism, including housing finance redlining, disinvestments, and other land use policies that pushed Black communities in areas of high pollution and environmental hazards.

Climate-related risks, especially extreme heat and flooding, disproportionately impact the District's disadvantaged communities. These impacts are a direct result of a history of policies and decisions that disfavored and further marginalized people of color and low-income populations, causing inequities in access to green space, clean air and water, and health care.[8] Shaped by the past, present-day inequality will be compounded by the worsening impacts of climate change.

The difference between life expectancy across neighborhoods in the District of Columbia ranges from 65 years to 90 years, with higher life expectancy overwhelmingly located in western neighborhoods and lower life expectancy in eastern neighborhoods.[9] And likely due to air pollution, residents living along the Anacostia freeway east of the Anacostia River in Wards 7 & 8 are 23 times more likely to go to the emergency room for asthma and respiratory issues compared to those in other parts of the District.[10] These neighborhoods suffer from disparate health outcomes, associated with poor air quality and other social determinants of health, including barriers to accessing healthcare.[11]

Related to flooding, over 99% of single-family homes in the high-risk floodplain are located in neighborhoods east of the Anacostia River, which include predominantly Black communities with approximately double the rates of poverty compared to District's average rate.[12] For example, more than 700 multi-family housing units sit in the Watts Branch 100-year floodplain alone.

7 Council Office of Racial Equity (note 5).

8 Equity Framework. D.C. Department of Energy & Environment (October 13, 2021). https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/DOEE%20Equity%20Framework_Oct%202021.pdf.

9 Tejada-Vera B, Bastian B, Arias E, Escobedo LA., Salant B, *Life Expectancy Estimates by U.S. Census Tract, 2010-2015*. National Center for Health Statistics. 2020. https://www.cdc.gov/nchs/data-visualization/life-expectancy/index.html.

10 Sarah C.P. Williams. *Air Equality for All.* GW Magazine (Summer 2022) https://magazine.gwu.edu/air-equality-all.

11 Health and Climate Change Urban Profile: Washington, District of Columbia. World Health Organization (2022). https://www.who.int/publications/m/item/health-and-climate-change-urban-profiles--washington-dc

12 Carolyn Kousky & Len Shabman. An Overview of the National Flood Insurance Program in Washington, DC. (February 2021) https://riskcenter.wharton.upenn.edu/wp-content/uploads/2021/02/DC-NFIP-Brief.pdf.

In September of 2020, the Commission affirmed its position on social equity through the adoption of the following statement:

> *The District of Columbia Commission on Climate Change & Resiliency affirms our commitment to working collaboratively to imagine and foster a District of Columbia which is free of systemic racism, where every person enjoys the social, economic and political power to thrive. Further, the Commission believes that shocks and stressors, like the current pandemic, are amplified by climate change and represent an even greater risk to black and brown people. Thus, the Commission recommits, with a keen sense of urgency, to sound the alarm in areas of need, while championing strategies to mitigate the damaging impacts of climate change for communities of color in the District of Columbia, especially in areas of environmental justice, health access and equity.*[13]

THE SCALE OF REPORT RECOMMENDATIONS

The Commission formulated recommendations at various scales with some identifying broad areas of need, and others representing specific calls to action. This reflects the status of climate action, where in some places, the District has taken significant action and proposed aggressive targets, but in other instances has yet to articulate its approach to specific necessary steps to achieve those goals. In other recommendations, the Commission articulates a general need to develop coordinated strategies, such as a coordinated communication strategy or a climate workforce.

For all recommendations, the Commission began with a landscape view of climate action in the District. This included an assessment of plans and strategies including Clean Energy DC, Climate Ready DC, Sustainable DC, Resilient DC, and moveDC. From this landscape view, the Commission began identifying the most-critical actions, goals, and missed milestones. In direct response to the pace and expanse of the District's progress, the Commission formulated priority recommendations at varying degrees of specificity. See Appendix A for more information on the Commission's methodology.

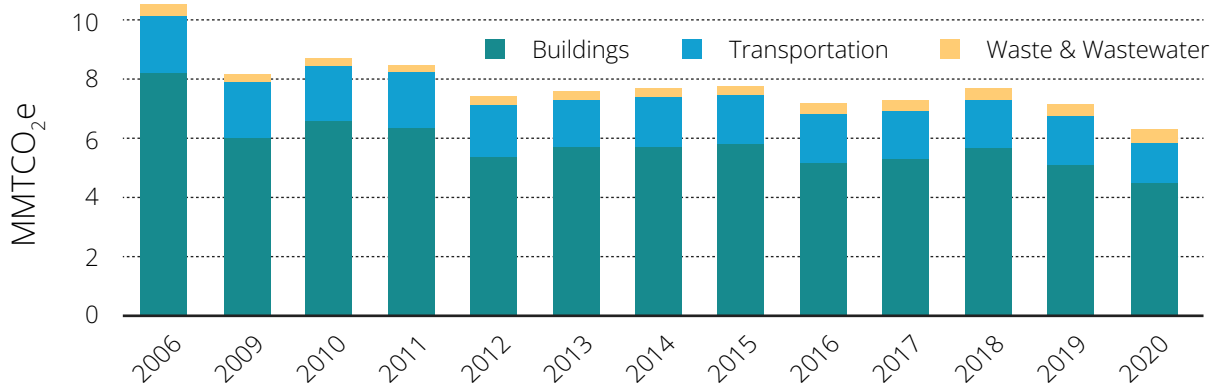
13 District of Columbia Commission on Climate Change and Resiliency, Resolution Adopted in September 2020 www.climatecommission.dc.gov/page/meetings-2.

MITIGATION: REDUCING OUR CONTRIBUTION TO CLIMATE CHANGE

The District's production of greenhouse gas emissions has been fully inventoried and publicly reported by the DC Department of Energy & Environment on an annual basis since 2006, with 2020 as the most recently completed inventory. In 2020, the total GHG emissions from the District totaled 6.3 million metric tons[14] of carbon dioxide equivalent (MMCO2e), which translates to a per capita average of 9.1 metric tons of carbon dioxide equivalent (MTCO2e).[15] The District has made substantial progress in reducing its emissions since the first inventory of 2006, with an overall reduction of 40% over 14 years, or an average long-term track record of about 2.8% reduction per year.

Almost three quarters of the District's greenhouse gas emissions are generated by the operations of our buildings (~72% measured in the 2020 GHG Inventory), with transportation responsible for ~20%. This distribution of emissions is unusual for a city and represents the District's concentration of dense land uses and a lack of an industrial base.

Figure 1: District of Columbia: Citywide Emissions by Sector[16]



Relative to 2006 baseline emissions, the District's citywide emissions have trended downward, with buildings—including the energy use during operation—continuing to generate the largest portion of the total contribution.

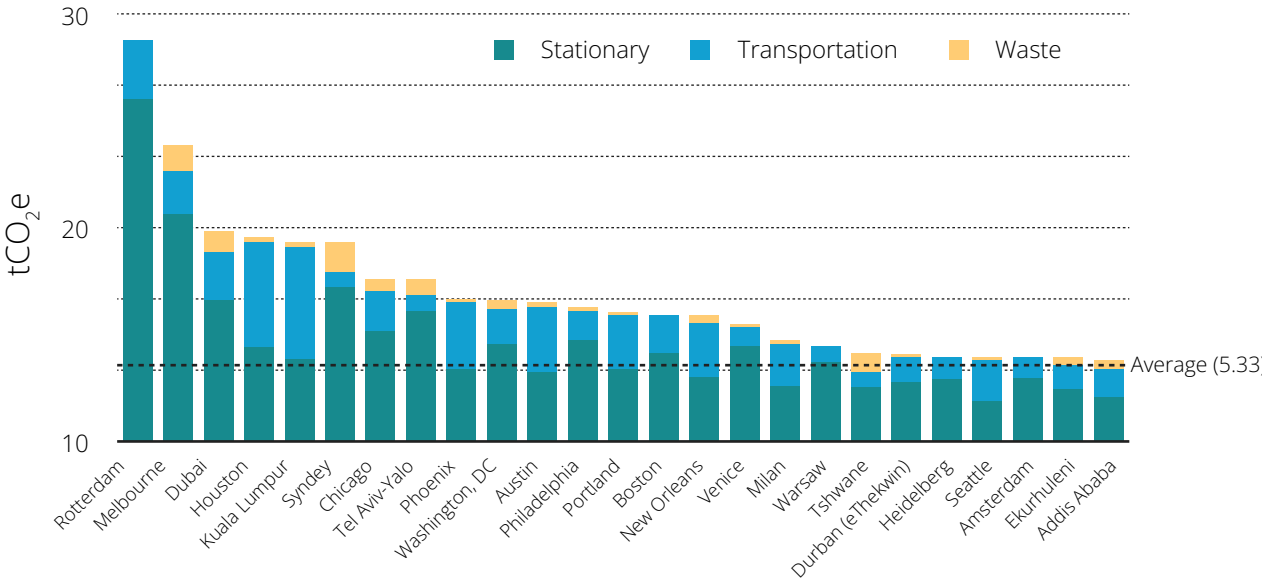
14 2020 was the most recently reported GHG inventory, which included a sharp decline in GHGs due to the reduction of travel and activity during the COVID-19 pandemic. Although 2021 may show a small increase in GHGs as society re-opened, a continued downward trajectory is anticipated.

15 D.C. Department of Energy & Environment, *Greenhouse Gas Inventories* (2022) available at https://doee.dc.gov/service/greenhouse-gas-inventories.

16 D.C. Greenhouse Gas Inventories (note 15).

The District's per capita emissions are higher than the average of 5.33 MTCO2e for cities participating in the global C40 initiative.[17] In the context of a growing region with sustained long-term demand for new housing, the District's emphasis on affordable, transit-oriented, multi-family housing production is itself one of the most strategic and impactful climate mitigation strategies that is being advanced.

Figure 2: City Comparison - Emissions Per Capita by Sector[18]



The District's per capita emission rate of 9.88 metric tons of carbon dioxide equivalent (based on 2019 inventories, the most recent year compiled for city comparisons) exceeds the average of 5.33 metric tons among cities that complete GHG inventories.

The District recently affirmed and advanced net-zero carbon targets through the Climate Commitment Amendment Act of 2022. Specifically, the legislation mandates policies to achieve a 60% reduction of greenhouse gas emissions by 2030 (compared to 2006) and carbon neutrality by 2045.

While the District's current trajectory of emissions reduction is on pace to achieve these goals, further progress toward a clean economy will become more challenging in the future, as existing emissions reduction practices are achieved, and as new patterns of work-from-home behaviors shape the local economy. To continue the rate of emissions reduction, the District—and its residents, businesses, and stakeholder partners—must take steps that challenge existing norms and push innovative strategies. For example, net zero energy targets necessitate a transition away from fossil gas,[19] which will require strategic business and infrastructure planning which also protects fossil gas consumers.

17 These comparisons are caveatted by variances in reporting methodologies.

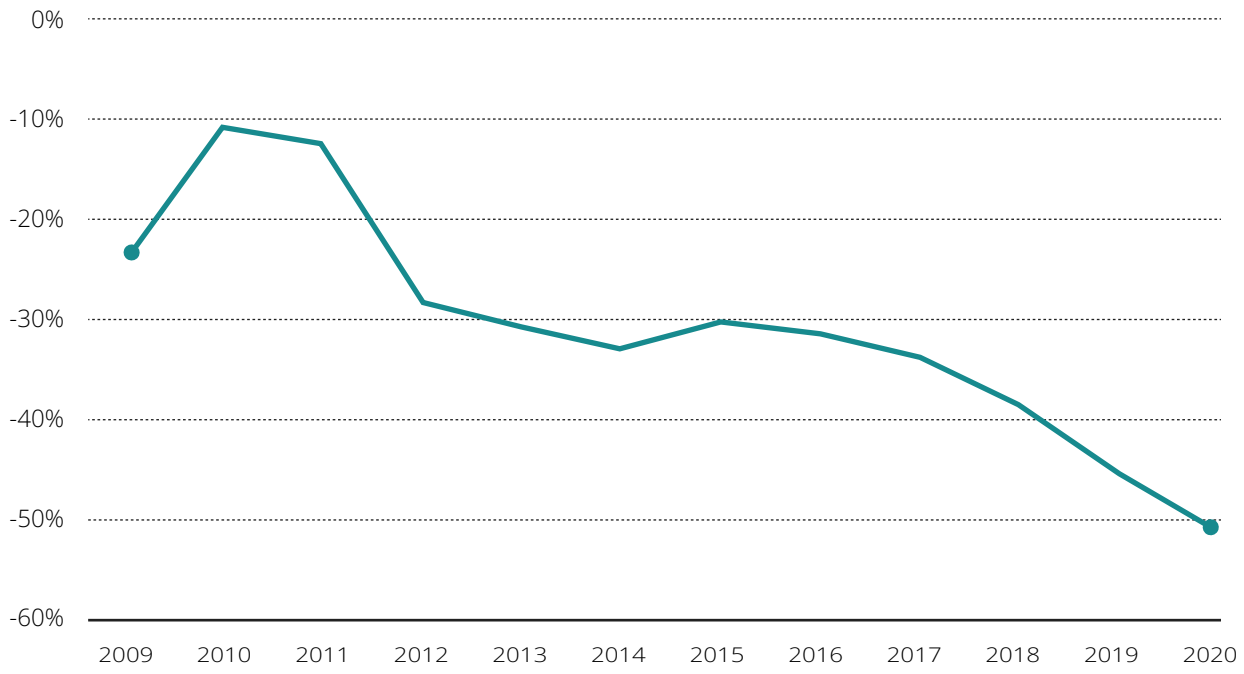
18 C40 Cities Climate Leadership Group, Greenhouse Gas Emissions Interactive Dashboard (2022) https://www.c40knowledgehub.org/s/article/C40-cities-greenhouse-gas-emissions-interactive-dashboard?language=en_US

19 Fossil gas is often called 'natural gas' by industry and others. However, this term obscures the fact that it is a fossil fuel, which is extracted from petroleum wells and burned in power plants and appliances, emitting greenhouse gases and other pollutants. To ensure that this is understood by readers of this report, we use the term 'fossil gas' throughout.

BUILDING SECTOR

Within the building sector, an impressive 50% reduction in emissions from building-related electricity use has been achieved since 2006. This represents a positive long-term trend which must be sustained through energy performance standards, building retrofits, the decarbonization of our electricity supply, and the advancement of smart management practices and behavior patterns.

Figure 3: Relative Emissions from Building Electricity Compared to 2006 (District of Columbia)[20]

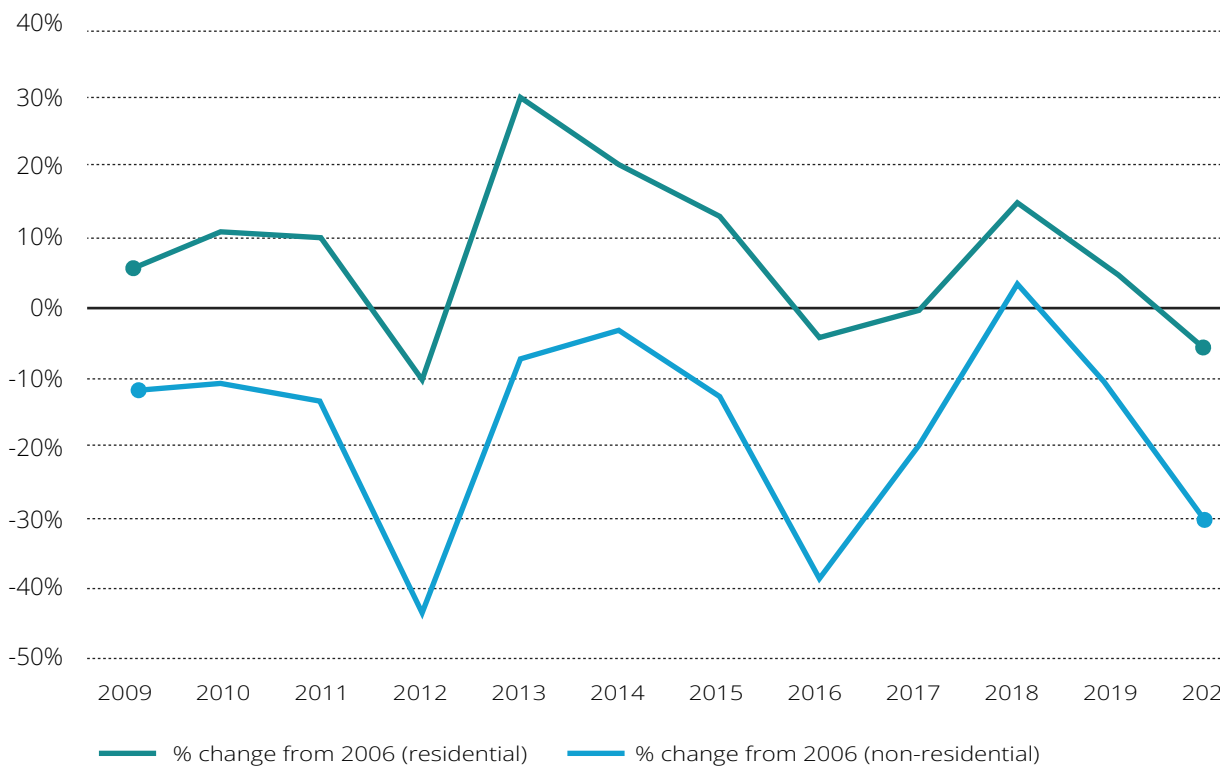


The District's emissions associated with building electricity, powered through the regional grid, have trended downward with a low in 2020 of 50% compared to the 2006 baseline.

Within the building sector, fossil gas-related emissions are highly variable, due to changes in weather (e.g., a colder winter leads to greater gas-related emissions from gas-powered furnaces). While conclusive long-term emissions trends related to fossil gas use in buildings are hard to identify, there is a clear distinction between commercial buildings and residential buildings, with commercial fossil-gas use consistently less than residential buildings

20 D.C. Greenhouse Gas Inventories (note 15).

Figure 4: Emissions from Fossil Gas Combustion in Building Sector Relative to 2006 (District of Columbia)[21]



Emissions from fossil gas in commercial and residential buildings remains volatile, likely correlated with weather patterns driving fluctuations in use year-to-year.

Clean Energy DC, the District's energy and climate action plan, identifies three fundamental pillars to addressing building sector emissions:[22]

1. **Energy Efficiency:** reducing waste and using less energy to power homes, offices, and businesses;
2. **Electrification:** eliminating the use of fossil gas and other combustion fuels; and
3. **Clean Energy:** increasing proliferation of carbon-free energy, like onsite solar generation, and decarbonizing the grid with procured renewables.

These three steps, with prioritization for efficiency, provide a strong foundation to address the District's contribution to climate change and achieve net zero energy targets. Each pillar is fundamentally necessary but independently insufficient to effectively reduce our contribution to the climate crisis.

21 D.C. Greenhouse Gas Inventories (note 15).

22 D.C. Department of Energy & Environment. Clean Energy DC, Summary Report. (Aug 2018). https://doee.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Clean%20Energy%20DC%20-%20One-Pager.pdf.

ADAPTATION: PREPARING FOR IMPACTS OF A CHANGING CLIMATE

Although the District is making progress toward reducing contributions to climate change, the impacts from increased flooding and heat are subject to global progress on mitigating climate change. Even if greenhouse gas emissions immediately cease globally, the District will continue to experience delayed impacts of past emissions for decades, including sea level rise, increased temperatures, and more frequent and intense rainfall patterns.[23] As previously noted, global GHG emissions are currently increasing, not decreasing, and there is currently no evidence that global emissions reduction targets will be achieved.

Therefore, all stakeholders and decision-makers in the District must regard future environmental conditions as dynamic and evolving as opposed to being historically constant. The two primary climate change impacts in the District are increasing temperatures (heat) and increasing intensity and frequency of storms, precipitation, and sea-level rise (flooding).

EXTREME HEAT

Average temperatures have risen dramatically since the 1900s and are projected by the National Atmospheric and Oceanic Administration (NOAA) to continue to rise by up to a range of 6 to 10 degrees Fahrenheit (F) in the next 60 years.[24] Emergency heat days, defined by the District as days that exceed 95 F heat index, are expected to increase from a baseline average of 11 days to as many as 75 days a year.[25] Due to increasing temperatures, the District is expected to have 6 to 9 more high ozone days (days above 75 parts per billion) by 2050. High temperatures cause increased health risks, threaten infrastructure and energy systems, decrease air and water quality, and are associated with suicide, psychiatric hospital visits and heightened aggression and anxiety.[26]

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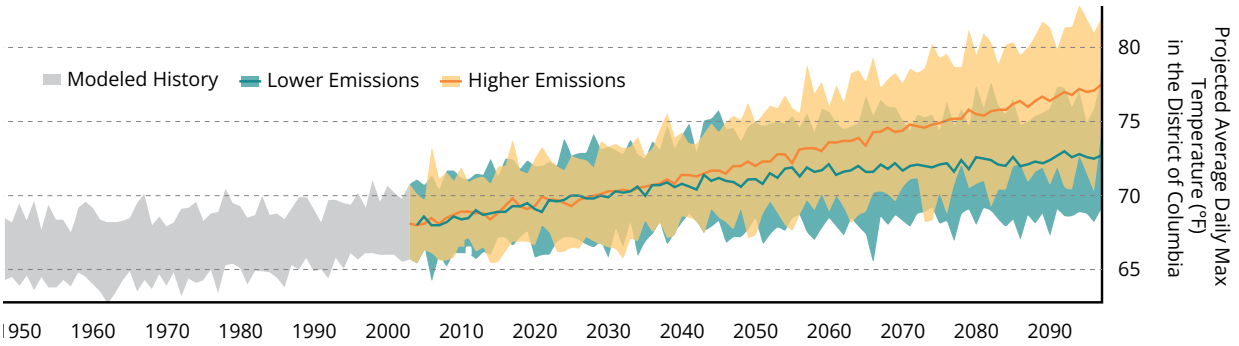
23 Rebecca Hersher, *Carbon Emissions Could Plummet. The Atmosphere Will Lag Behind.* April 14, 2021. https://www.npr.org/2021/04/14/981333730/carbon-emissions-could-plummet-the-atmosphere-will-lag-behind.

24 Compared to a baseline average from 1981-2000. The Climate Explorer, U.S. Climate Resilience Toolkit, https://crt-climate-explorer.nemac.org/climate_graphs/?city=Washington%2C+DC&county=District%2Bof%2BColumbia&area-id=11001&fips=11001&zoom=7&lat=38.9071923&lon=-77.0368707 (last accessed 11/8/2022).

25 Keep Cool DC, DC Department of Energy & Environment (2022) https://storymaps.arcgis.com/stories/7692809a1d6a498482d3fed431f432f9.

26 Jingwen Liu, Blesson M. Varghese, Alana Hansen, Jianjun Xiang, Ying Zhang, Keith Dear, Michelle Gourley, Timothy Driscoll, Geoffrey Morgan, Anthony Capon, Peng Bi, I*s there an association between hot weather and poor mental health outcomes? A systematic review and meta-analysis*, Environment International, Volume 153, (2021). https://www.sciencedirect.com/science/article/pii/S0160412021001586#s0130;
Jamie T. Mullins & Corey White, *Temperature and mental health: Evidence from the spectrum of mental health outcomes*. J Health Econ. (2019) https://pubmed.ncbi.nlm.nih.gov/31590065/.

Figure 5. District of Columbia Average Temperature 1950-2100[27]



Accounting for varying global emission scenarios, the District is projected to experience 6-10 degrees Fahrenheit increase by the end of the century. Such increase will strain outdoor workers, degrade infrastructure, and threaten public health.

FLOODING

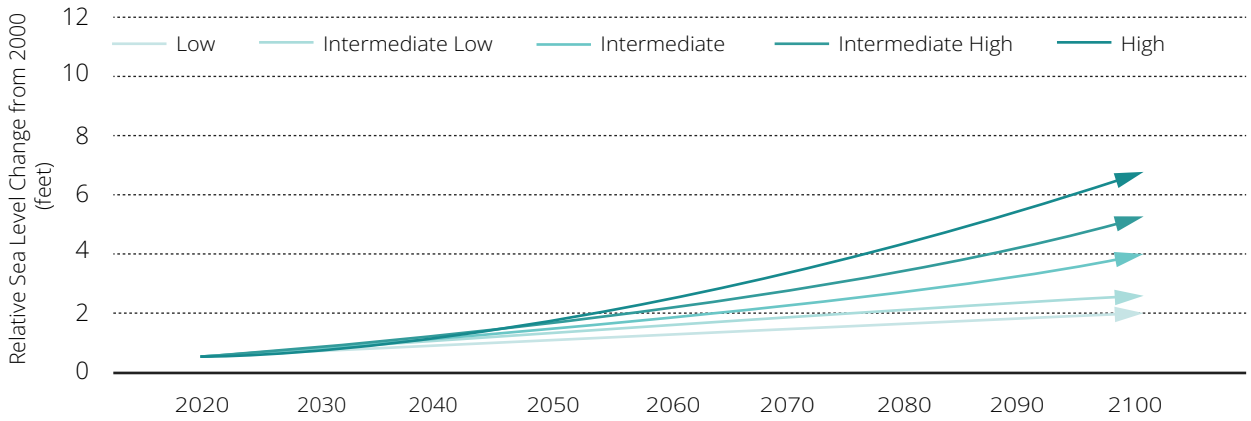
The District, flanked by the Anacostia and Potomac Rivers, is susceptible to riverine and coastal flooding driven by sea level rise and storm surge, as well as interior flooding driven by precipitation events and stormwater overflows. These risks are exacerbated by poor land use decisions, dramatic increase in impervious surfaces, aging stormwater infrastructure and historic actions to fill and bury tributary streams throughout the District. Other potential variables, such as rising groundwater levels and springs, could further exacerbate risks.

The District's flood risk is projected to increase due to climate change, but the District is already experiencing floods that interrupt local economies, damage homes and businesses, and disrupt livelihoods as evidenced by recent flood events in 2010, 2016, 2019, 2020, 2021, and 2022. By 2080, The District is predicted to experience roughly 3.4 feet of sea level rise based on NOAA's intermediate-high scenario. The risk imposed by sea level rise is also compounded by projected increases in the frequency and intensity of precipitation and storm events during the same period.

Figure 6 identifies the District's sea-level rise as determined by NOAA's alternative climate scenarios.

27 The Climate Explorer (note 24).

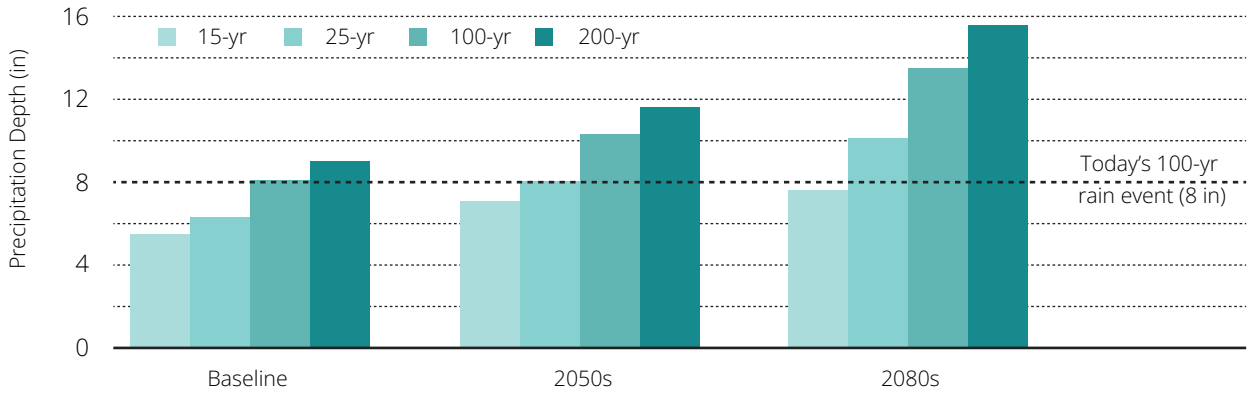
Figure 6: Sea Level Change Projections for Washington, DC (2022)[28]



The District is projected to experience 3.4 feet of sea level rise in 2080 based the 2022 Intermediate High scenario.

Figure 7 projects the District's growing intensity of extreme rain events as determined by the amount of precipitation. By 2050, the extreme rainfall currently expected every 100 years is projected to become more frequent, falling every 25 years. In turn, by 2050, the 100-year storm event is projected to produce 25% more precipitation.

Figure 7: Projected Extreme Rain Events by Precipitation Depth[29]



Over the next 60 years, the likelihood of today's 100-year rain events in the District will increase while the threshold for "extreme" rises.

Adapting to a changing climate is a long-term and iterative set of decisions which cumulatively enhances the resilience of District residents, neighborhoods, and communities.

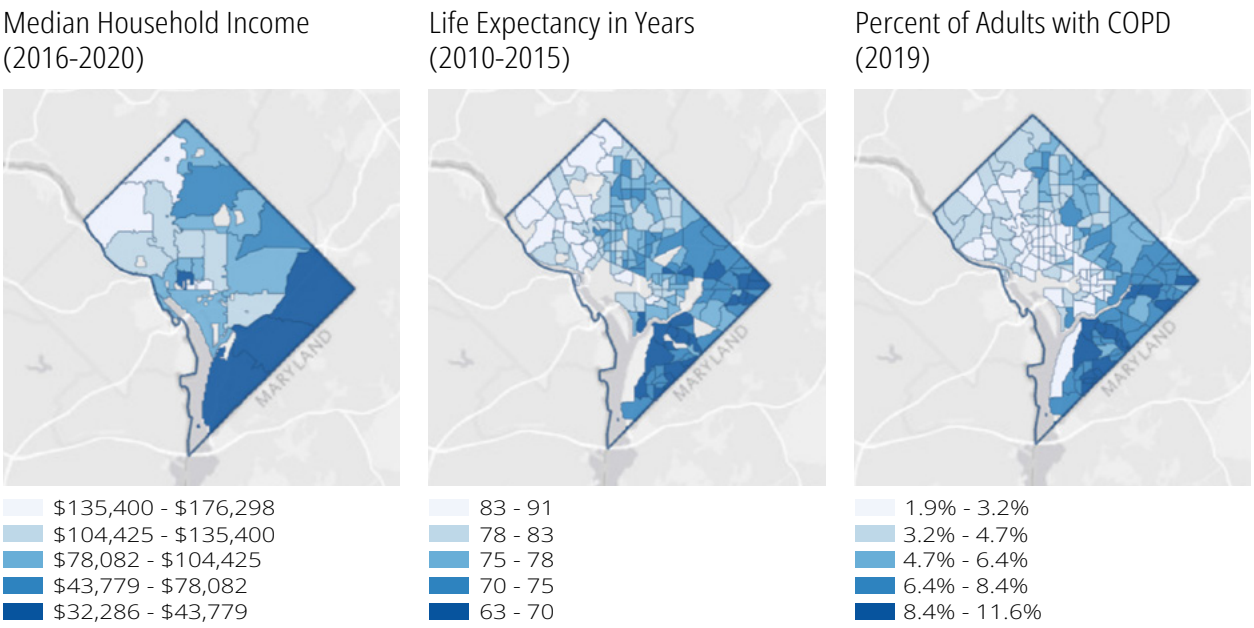
28 National Atmospheric and Oceanic Administration. D.C. Sea Level Rise Projections (2022). Based on Global and Regional Sea Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines.

29 D.C. Department of Energy & Environment. Climate Ready DC (2016) available at https://doee.dc.gov/climateready.

COMMUNITY ENGAGEMENT

Many District residents are already actively engaged in mitigating and adapting to climate change, but this engagement is not always equitable. Knowing that climate change has disproportionate impacts on disadvantaged communities, community engagement will be a powerful tool to mitigate the greatest vulnerabilities and redress disparities.

Figure 8: Inequities in the District of Columbia[30]



The Eastern quadrants of the District experience higher rates of poverty, COPD, and lower life expectancy compared to Western. Many of the same communities have higher concentration of Black residents and heightened vulnerability to climate impacts.

As Figure 8 demonstrates, communities in the eastern-most portions of the District bear dramatic burdens of high rates of poverty and health conditions.[31] Because of the historic and current inequities and disproportionate social impacts, the District is working to align climate efforts with community needs, which are typically higher in disadvantaged communities.

Examples of this work include the Resilience Incubator at the FH Faunteroy Center near Watts Branch, flood risk education sessions with community-based organizations associated with Oxon Run and Anacostia Park, and efficiency assistance programs targeted to affordable housing units. Additionally, the Racial Equity Achieves Results (REACH)

30 DCHealthMatters.Org. Community Dashboard. [Based on data from the U.S. Census Bureau American Community Survey 5-year] https://www.dchealthmatters.org/indicators (last accessed November 10, 2022).

31 DCHealthMatters.org Census tract data on median household income, rates of COPD, and average life expectancy.

Amendment Act of 2020, now requires every new District policy and program to undergo a racial equity assessment of the benefits and burdens of a proposed action.[32] While these steps are commendable, future actions must continue to position vulnerable communities at the center of climate change strategies.

Addressing contributions to and impacts of climate change requires a paradigm shift in our procedures for planning, building, and maintaining the spaces in which we live, work, and play. We need engaged communities and a well-educated workforce to shape and implement the new technologies and innovations necessary to address the climate crisis.

This requires a concerted and lasting effort to rectify centuries of discriminatory policies and disinvestments that today result in making historically vulnerable communities even more vulnerable to future climate risks. The District has led community-centered models, such as the Ward 7 Resilience Hub Community Committee, which seek to dismantle the persisting inequities in the climate context, but more work is needed that will require time, resources, and expertise.

32 Racial Equity Achieves Results (REACH) Amendment Act of 2020 (D.C. Law 23-181) available at https://code.dccouncil.gov/us/dc/council/laws/23-181#:~:text=(a)(1)%20There,social%20justice%2C%20and%20economic%20inclusion

CLIMATE MITIGATION RECOMMENDATIONS

The District has tracked its greenhouse gas emissions since 2006 and has legislated a target of carbon neutrality by 2045. The roadmap to achieve these goals include three key components: reduce energy demand (efficiency); eliminate combustion of fossil fuels (electrify); and convert to renewable sources of energy (clean energy). The prioritization of energy efficiency first is necessary to make the climate objectives achievable, and the District has taken critical first steps toward increasing energy performance through the Building Energy Performance Standards (BEPS). However, there remain large gaps in the District's climate roadmap regarding the decommissioning of fossil gas infrastructure and the transition to clean energy.

The Commission's recommendations include:

1. Phase Out Fossil Gas in Commercial and Residential Buildings
2. Increase Proliferation of Renewable Energy
3. Advance the Efficiency and Electrification of the Transportation System
4. Establish Greater Accountability and Integrated Coordination on Climate Actions

RECOMMENDATION 1:

Phase Out Fossil Gas in Commercial and Residential Buildings.

Fossil gas has 84 times more global warming potential than carbon dioxide.[33] In addition to the end use burning of fossil gas, the extraction, transmission, and last mile delivery of the fuel cause high rates of leakage directly into the atmosphere. In DC alone, studies have found hundreds of leaks from underground gas distribution pipelines.[34] The combination of leakage of potency urge expeditious phasing out of fossil gas and decommissioning of fossil gas.

Recent studies have shown that leaks from gas stoves are much higher than previously known.[35] Indoor gas appliances also release other hazardous pollutants which damage air quality and are known to cause significant health risks.[36] As a result, the continued use of fossil gas is detrimental to public health and is incompatible with District, national, and international goals of reducing GHG emissions.

PROPOSED ACTION:

1.1 The District must initiate an orderly transition off fossil gas.

RELATED DISTRICT PLANS/GOALS

SDC Built Environment Goals 3 & 4

CEDC Clean & Renewable Energy

The District's plan to achieve carbon neutrality by 2045,[37] and the Washington Gas Climate Business Plan[38] for Washington, D.C. as submitted to the D.C. Public Service Commission (PSC) in Formal Case No. 1167, Order No. 20754, reveal significant gaps. The transition away from fossil gas to an electrified and renewable future must be achieved in a period of only 23 years and an orderly plan to do so has not been advanced nor embraced by key stakeholders.

33 Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Table 8.7) [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA *available at* https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf.

34 Jacob Fenston. Hundreds of natural gas leaks in D.C. contribute to climate change. National Public Radio. (February 24, 2022) https://www.npr.org/local/305/2022/02/24/1082783437/hundreds-of-natural-gas-leaks-in-d-c-contribute-to-climate-change.

35 Eric D. Lebel, Colin J. Finnegan, Zutao Ouyang, and Robert B. Jackson. Methane and Nox Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes. Environmental Science & Technology 2022 56 (4), 2529-2539 DOI: 10.1021/acs.est.1c04707 https://pubs.acs.org/doi/10.1021/acs.est.1c04707.

36 Gas: A Major Source of Indoor Air Pollution. Sierra Club (December 2019). https://www.sierraclub.org/sites/www.sierraclub.org/files/sce-authors/u6902/Gas%20appliances%20indoor%20air%20pollution.pdf.

37 Department of Energy & Environment. Carbon Free DC (n.d.) https://storymaps.arcgis.com/stories/034104405ef9462f8e02a49f2bd84fd9. (The District is currently updating the Carbon Free DC plan to account for updated carbon neutrality target of 2045).

38 Washington Gas. *Natural Gas and its Contribution to a Low Carbon Future.* [Climate Business Plan for Washington, D.C.] (March 2020) https://sustainability.wglholdings.com/wp-content/uploads/Climate-Business-Plan-March-16-2020.pdf.

The District's Carbon Free DC plan identifies approximately one third of the proposed emissions reductions from the removal of fossil gas from buildings. However, the Washington Gas plan recently submitted to the PSC incorporates no language in support of decommissioning gas. Instead, the plan focuses on modernizing existing infrastructure to reduce emissions with a promise to switch to "green hydrogen" and "renewable natural gas" with no concrete pathway for transitioning off fossil gas. These findings reveal that the District does not have a clear plan for transitioning the city off fossil gas and raises fundamental questions associated with the costs of this transition and financial burdens to ratepayers.

With nearly 400 active leaks of methane—the main component of fossil gas—polluting all eight wards,[39] it is important to address and repair methane leaks as the public health impacts disproportionately affect families in lower resourced and vulnerable communities. Still, this work must not be leveraged to rationalize increased investment in expanding gas infrastructure at the expense of ratepayers. Efforts to repair leaking gas infrastructure should be accompanied by the development of a practical and fully adopted plan to phase out the use of fossil gas in the District. This phase out process must include a social equity strategy to ensure that vulnerable communities who currently use fossil gas are not disproportionately impacted by this transition.

The transition off fossil gas is unprecedented and requires full support from the Mayor, the Council and the community of residents who are gas consumers. The District Public Service Commission (PSC) plays a critical role in advancing the District's climate agenda through regulating utilities in accordance with DC Code § 34–808.02.

It is unclear whether the PSC currently possesses the expertise and support necessary to expeditiously decommission fossil gas use and associated infrastructure to be fully aligned with the District's legislated climate goals.[40] We recommend the Mayor and Council direct the PSC to phase out fossil gas by establishing a clear timeline with enforceable milestones that ensure implementation in a manner which protects vulnerable ratepayers. Failure to create an orderly transition is likely to raise very significant social equity concerns, as low-income rate payers are left "holding the bag" of fossil gas infrastructure, after high-income ratepayers have fully migrated away from the gas utility by electrifying their households.

39 Neighborhood Researchers Find Hundreds of Methane Gas Leaks Across DC. Beyond Gas DC. (February 23, 2022) https://www.sierraclub.org/sites/www.sierraclub.org/files/sce-authors/u6902/Methane-Leaks-Across-DC.pdf.

40 Although the Council required the next PSC appointee to have experience and expertise in electric grid modernization and renewable energy integration, the reappointment of Chairperson Emile Thompson delayed the inclusion of a climate expert on the PSC. See, Council of the District of Columbia. (2022). Resolution 24-252, *Public Service Commission Member Qualifications Emergency Declaration Resolution of 2022*. District of Columbia Register (Vol 69/28). https://www.dcregs.dc.gov/Common/NoticeDetail.aspx?NoticeId=N124470.

PROPOSED ACTION:

1.2 Mandate electric replacement appliances for existing buildings.

RELATED DISTRICT PLANS/GOALS

CEDC Existing Buildings

Recent legislation requires all-electric new buildings, prohibiting on-site combustion of fossil fuels beginning in 2026. But gas-fired water heaters, ovens, gas stoves, and clothes gas dryers in existing buildings continue to consume substantial quantities of fossil gas and have not been subject to new regulation.

We recommend passage of legislation to ban the installation of new gas-fired appliances in any building, even in cases when a substantial renovation is not being advanced. This would help advance the transition off fossil gas, improve indoor air quality, and reduce GHG emissions. This statutory action should be complemented with a full mobilization of coordination efforts to ensure that District residents are the beneficiaries of new federal financial incentives in the Inflation Reduction Act. The District should not ever find itself in a position where these federal financial incentives are not exhausted.

RECOMMENDATION 2:

Increase Proliferation of Renewable Energy Sources on the Electricity Grid.

The transition to an electricity grid powered by clean energy sources is enabled by both on-site renewable energy as well as the regional proliferation of clean energy generation. Despite outstanding programs advancing onsite clean energy, such as the Solar for All program, the District will never be able to generate all of its electricity through on-site solutions.

BUILDING ENERGY PERFORMANCE STANDARDS

Transition to all renewable sources of energy first requires a reduction of energy demand and the monitoring of energy demand. The District is prioritizing energy efficiencies to minimize energy waste and power our homes, businesses, and offices with less energy. On building energy efficiency, the District is a national leader in establishing and advancing the Building Efficiency Performance Standards (BEPS). BEPS currently applies to buildings with floor areas over 50,000 sq ft. This accounts for roughly 44% of total building square footage in the District. During the next phase, beginning in 2027, BEPS will apply to buildings over 25,000 sq ft, increasing the coverage to roughly 49%.

PROPOSED ACTION:

2.1 Council should increase oversight of PSC's role in facilitating regional renewable energy procurements.

RELATED DISTRICT PLANS/GOALS

CEDC Clean & Renewable Energy

The District has a renewable portfolio standard (RPS) target of obtaining 100 percent of the District's electricity from clean sources by 2032, the most aggressive target of any state. However, the RPS alternative compliance fees do not guarantee achievement of these lofty goals or the District's net zero carbon target of 2045. For example, Pepco reported 7% of its energy sources as renewable despite the RPS requirement of 21.7% in 2020.[41] As a result, Pepco has not adequately exercised its procurement abilities to increase the share of renewable energy in the District' supply.

In August 2022, the PSC approved the first long-term solar purchase power agreement (PPA) to serve a target quantity of 5% of the Standard Offer Service (SOS) electricity load beginning in December 2024. While this was a critical step forward, the delay in executing even a relatively small PPA hinders the District's ability to achieve a 100% renewable energy supply by 2032. According to a study by the Center for Renewable Integration, long-term renewable power purchase agreements could reach ~70-90% renewable for SOS without increased costs to consumers (rather, with potential to decrease costs) based on the current regional grid composition.[42] Therefore, the Mayor and Council should increase its oversight of PSC's regulatory actions in support of more long-term renewable PPAs that will account for larger portions of the SOS and reduce the carbon intensity of the default electricity supplied to the District.

PROPOSED ACTION:

2.2 Accelerate equitable grid modernization for renewable deployment.

RELATED DISTRICT PLANS/GOALS

CEDC Energy System Modernization

CRDC Target 15

The District has ample capacity to expedite electrification efforts for buildings and transportation systems as the grid is capable of handling far greater loads than our highest peak demand.[43] However, the District should assess localized grid capabilities to ensure that disadvantaged communities especially have the necessary grid infrastructure to host electric vehicle charging stations and transition to all-electric buildings.

41 Pepco. (2020). Environmental Fuel Source Information. https://www.pepco.com/MyAccount/MyBillUsage/Documents/Pepco%20DC%20Enviro%20Fuel%20Mix%20Insert_11.20_ADA.pdf.

42 D.C. Office of the Attorney General. (2018). Comments by the Department of Energy & Environment (Public Service Commission Formal Case No. 1017 - In the Matter of the Development and Designation of Standard Offer Service in the District of Columbia, Ed.). https://edocket.dcpsc.org/apis/api/Filing/download?attachId=81688&guidFileName=61436d87-2356-4e5d-9005-5608aa7950e7.pdf. Notably, this availability of renewable energy is expected to increase in light of federal action, primarily the Inflation Reduction Act of 2022.

43 Center for Renewables Integration. Feasibility Study: Increasing the Renewable Energy Content of Standard Offer Service. (September 28, 2018). https://edocket.dcpsc.org/apis/api/Filing/download?attachId=81688&guidFileName=61436d87-2356-4e5d-9005-5608aa7950e7.pdf.

Additionally, microgrids must be a part of a carbon neutral future. Microgrids are a fundamental component of the District's response to climate change and necessary to the achievement of legislatively mandated climate targets. Deployment of microgrids can help advance the availability and reliability of renewable energy in the District, and provides provide resilience benefits through multiple sources of energy—locally generated solar and the regional grid, thus diversifying and reducing the risk of power loss. The resilience benefits will become increasingly important as disruptive weather events become more frequent and severe. Thus, the District—with leadership from the PSC—should advance microgrid installation with targeted planning, including in low-income and disadvantaged communities.

RECOMMENDATION 3:

Advance the Efficiency and Electrification of the Transportation System.

Transportation- related emissions account for 21% of the total carbon emissions in the District, according to the 2020 GHG inventory. With nearly 700,000 residents, 400,000 daily commuters, and 21 million annual visitors, decarbonizing transportation is a critical factor to achieving the District's target of being carbon neutral by 2045.

PROPOSED ACTION:

3.1 Expand DDOT's ongoing efforts to shift travel modes away from single occupancy vehicles.

RELATED DISTRICT PLANS/GOALS

SDC Transportation Goal 1, 2 & 3

MDC Policy J & L

To increase the efficiency of transportation, the District Department of Transportation (DDOT) is reducing the space and energy needed to move people and things throughout the city. This includes increases in use of public transit that moves more people with less cumulative energy, and in active commuting (walking, biking) that requires no sources of fuel. The Sustainable DC plan and the District's transportation plan, moveDC, include mode-shifting priorities that reflect the importance of an efficient system to reduce the transportation sector's contribution to climate change.

In furtherance of those goals, DDOT leads several effective initiatives to incentivize public and active modes of moving. This includes Capital Bikeshare, investments in protected bike lanes, employer-provided public transit incentives, and other more foundational strategies such as land use decisions, which should continue to be prioritized and expanded. The transportation demand management priorities of moveDC and Sustainable DC would be further advanced through decision-making tools that guide prioritization of public space amenities. For example, DDOT could establish principles to help determine when travel lanes should be prioritized over street parking or tree plantings over bus lanes. These

principles should help advance the operational safety for alternative modes of travel, and importantly, project specific priorities should be informed by community input.

PROPOSED ACTION:

3.2 Prioritize emission reduction of medium- and heavy-duty vehicles.

RELATED DISTRICT PLANS/GOALS

MDC Policy P

CEDC Electric Vehicles

Studies show 66,601 tons of CO2 reduction and 8.15 tons of primary particulate matter (PM2.5) reduction could be achieved by electrifying transit, school, and other buses.[44] Electrification of the District's vehicle fleet is a multi-agency effort that will lead to emissions reductions and air quality benefits, especially for communities that are unfairly overburdened by high pollution sources. Agencies including Department of Public Works, Metropolitan Police Department, Fire and Emergency Medical Services, District Department of Transportation, and Office of State Superintendent of Education are major contributors to the District's inventory of combustion engine vehicles.

Specifically, and in light of the new and increased incentives for medium- and heavy-duty electric vehicles created by the Inflation Reduction Act (IRA) and in accordance with the Clean Energy Omnibus Act of 2018, we recommend the District government develop a public-sector performance indicator to measure the rate of electrification of government-owned medium and heavy-duty vehicles (MHDs). This can be achieved by establishing an interagency Fleet Utilization Review Committee that can ensure MHD vehicle electrification policies and programs are structured to optimize for the new incentives from the IRA, as well as other grants, rebates, and programs, and advance equity and environmental justice for overburdened and underserved communities. We note that Montgomery County, Maryland has led on the adoption of electric school buses, and the District should learn from its example.[45]

In July 2020, The District of Columbia signed a Memorandum of Understanding (MOU) with 17 states in a commitment to phase out fossil fuel-burning medium- to heavy-duty truck and bus sales by one hundred percent by 2050. The Commission recommends the District prioritize adopting the strategies and recommendations outlined in the Northeast States for Coordinated Air Use Management (NESCAUM) medium-and heavy-duty zero emission vehicle action plan released as part of this multi-jurisdictional effort, including adoption of the California's Advanced Clean Trucks regulation. Many of the vehicle types covered under the action plan, like street sweepers and refuse trucks, are not covered by the Clean Energy DC Omnibus Amendment Act of 2018,[46] which regulates other vehicle emissions.

44 World Health Organization (note 11).

45 Steven Mufson & Sarah Kaplan. *A lesson in electric school buses*. (February 24, 2021) The Washington Post. https://www.washingtonpost.com/climate-solutions/2021/02/24/climate-solutions-electric-schoolbuses/.

46 D.C. Council. (2019). Clean Energy DC Omnibus Amendment Act of 2018. https://lims.dccouncil.gov/downloads/LIMS/40667/Signed_Act/B22-0904-SignedAct.pdf.

Similarly, non-road engines, such as construction and lawn equipment, are a major source of air and climate pollution but are not addressed by the Clean Energy Act or the NESCAUM action plan. Enacting new legislation to mandate and incentivize electrification for small equipment and higher diesel standards for existing medium and large non-road equipment would reduce health-harming air pollution and address a gap in existing frameworks for emissions reduction. The Council may look to California as an example of non-road equipment requirements.[47]

PROPOSED ACTION:

3.3 Accelerate vehicle electrification charging capacity and infrastructure in coordination with utilities, and with special consideration for multifamily and low-income families.

RELATED DISTRICT PLANS/GOALS

- SDC Transportation Goal 4
- TER Transportation Electrification
- CEDC Electric Vehicles

The Clean Energy Act and Electric Vehicle Public Infrastructure Expansion Amendment Act[48] demonstrate positive commitment to electrifying transportation, which is a key component to achieving net zero targets and improving air quality. Households in underserved communities often experience the greatest health disparities associated with air pollution and transportation emissions.

Fortunately, electric vehicles (EVs) are a growing portion of car purchases, but the District must implement its Transportation Electrification Roadmap[49] for the EV infrastructure to meet the needs of growing EV consumers. At its current rate of increase, EVs are expected to reach 11% of the market by 2030. But market forecasts that include lower battery costs and new vehicle options suggest the uptake could reach 34%—creating a heightened demand for accessible charging opportunities.[50] As of September 31, 2021, there were 6,133 electric vehicles in the District and a total of 671 charging ports, of which 614 were Level 2 and 39 were Direct Current Fast Charge.[51]

The composition of the District's housing stock challenges the deployment of EV charging infrastructure. 58% of residents are renters and 62% of The District's housing units are in multi-unit structures. The lack of charging opportunities for residents will both impede EV adoption and impede the District's ability to equitably deploy EV charging infrastructure across the city. Thus, the District should implement the Transportation Electrification

47 California Air Resources Board. Construction & Earthmoving Equipment. Accessed November 9, 2022. https://ww2.arb.ca.gov/our-work/topics/construction-earthmoving-equipment.

48 D.C. Law 22-78. Electric Vehicles Public Infrastructure Expansion Amendment Act of 2018. https://code.dccouncil.us/us/dc/council/laws/22-78.

49 The District of Columbia Transportation Electrification Roadmap. D.C. Department of Energy & Environment. (September 2022). https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/Final%20DC%20Roadmap%20sm.pdf.

50 The District of Columbia Transportation Electrification Roadmap (note 49).

51 EV Adaption. *Charging Stations by State* (September 2021) https://evadoption.com/ev-charging-stations-statistics/charging-stations-by-state/.

Roadmap and strategically target EV charging in public places, such as District-owned property, commercial facilities (grocery stores, parking lots, shopping malls), and places of work.

As noted in the Transportation Electrification Roadmap, residents in multi-family and underserved neighborhoods have greater obstacles to accessing EV infrastructure. As the electric vehicle market expands beyond early adopters (typically high-income, single-family homes that have access to off-street parking), DDOT, DOEE, and the Deputy Mayor of Operations and Infrastructure must prioritize equity considerations when planning investments in the deployment of EV infrastructure to avoid worsening existing disparities in our transportation system.

RECOMMENDATION 4:

Establish Greater Accountability and Integrated Coordination on Climate Actions.

As the District moves beyond the "low hanging fruit" in this multi-decade process of emissions reduction, the challenges will become more complex and multi-disciplinary. Over time, complex decisions will need to be coordinated and defended in order to achieve the District's legislated climate goals. Recent examples of inter-agency coordination, such as the DC Flood Task Force, illustrate the complexity of challenges and solutions needed to advance climate action.

PROPOSED ACTION:

4.1 The District needs increased audit capacity and oversight for the achievement of legislated climate targets.

RELATED DISTRICT PLANS/GOALS

SDC Governance Goal 1

The District has legislated aggressive net-zero energy and emissions reduction targets, but achievement of those goals is not assured. Currently, a key regulatory body responsible for effectuating these goals is the Public Service Commission's regulation of utilities. Despite DOEE's annual reporting of the District's Greenhouse Gas Inventory, there is no individual entity charged to analyze the carbon performance of proposed actions or investments or provide a carbon emissions analysis of proposed decisions in support of holding District agencies accountable to its overarching climate plans and laws. As a result, many goals and targets lack progress. More fundamentally, several gaps in the path to carbon neutrality remain unaddressed or impeded.

Therefore, the District should consider strengthening governance and oversight through an independent climate review position, such as a Climate Change Officer, with an associated auditing function to provide analysis of ongoing and future carbon performance

of policies and programs. This new governance capacity would serve to identify the most critical indicators of progress on both climate mitigation and adaptation and provide an independent analysis of policies and programs. This accountability should also be introduced in the Capital Plan budgeting process. The Commission recommends the audit function be independent from the executive and legislative branch, with authority to audit records and report freely on the status of climate targets, in a similar manner in which the Office of the Chief Financial Office functions with respect to budget analysis or the Office of DC Auditor in review of accounts and operations.

This new oversight and audit function will have a positive impact on helping to facilitate complex interagency coordination in support of integrated strategies and solutions and will do so by employing science-based accounting in support of smart and effective decision-making.

PROPOSED ACTION:

4.2 Minimize the role of offsets and ensure quality of offsets.

RELATED DISTRICT PLANS/GOALS

CFDC Key Strategies

Carbon Free DC articulates the District's goal of reducing its current GHG emissions of 7.6 MMTCO2e to net carbon neutrality by 2045. The plan acknowledges that the District's current trajectory of carbon emissions falls short of carbon neutrality by nearly 3.9 MMTCO2e. To address the shortfall, Carbon Free DC outlines six core strategies to neutrality including transportation alternatives, vehicle electrification, new construction standards, retrofitting existing buildings, improved building-grid integration, improved waste management, and local sequestration and carbon offsets. Of the six strategies, local sequestration and carbon offsets are planned to reduce 1.2 MMTCO2e of carbon or about 30% of the Carbon Free DC strategies and about 14% of the District's total carbon impacts.

The Commission finds this heavy reliance on carbon offsets troubling. Carbon offsets rely on other governments, businesses, etc. to reduce their emissions, and thus do not support the overall reduction of local emissions which are critical to commitments the District has made. Additionally, many carbon offset schemes are still in development and are therefore problematic and lack broadly accepted standards.

It is doubtful that quality offsets will be available in great amounts, given the overwhelming demand in the offset market and the limited supply. Therefore, the Commission reinforces the District's position to revisit and recalculate the residual emissions as the regional grid evolves with greater renewable availability and as technology improves. Given the range of challenges and limitations associated with deploying quality carbon offset programs, we also encourage the adoption of a standard framework like the Gold Standard or 3Degrees frameworks for developing, measuring, and verifying emission reduction activities.

PROPOSED ACTION:

4.3 Develop new protocols and policies to address embodied carbon emissions.

RELATED DISTRICT PLANS/GOALS

SDC Waste Goals 1 & 2

We commend the legislative steps the city has taken to reduce carbon emissions from buildings. Most notably, the recently enacted Climate Commitment Act accelerated the city's commitment to achieve carbon neutrality. Still, there are no policy measures that directly address embodied carbon emissions in the District. More than half of global GHG emissions are related to materials management (including material extraction and manufacturing) when aggregated across industrial sectors.

Current building codes address operating energy but do not typically address the impacts 'embodied' in building materials and products. Unlike operational carbon emissions, which can be reduced over time with building energy efficiency renovations and the use of renewable energy, embodied carbon emissions have irreversibly entered the atmosphere as soon as a building is built. We recommend that the Council review and expand upon the recommendations produced by the D.C. Green Building Advisory Council embodied carbon protocols and policies to adequately incorporate embodied carbon emissions into future decision-making.

CLIMATE ADAPTATION RECOMMENDATIONS

Climate change presents chronic stressors, such as increased average summer temperatures or impaired air quality, and acute shocks, such as storm-driven flooding or extreme heat waves. Although the District is making progress toward reducing contributions to climate change, the degree of impacts from increased flooding and heat are subject to the surrounding jurisdictions and global progress on climate change. Even if greenhouse gas emissions immediately cease globally, we will continue to experience delayed impacts of past emissions for decades, including sea level rise, increased temperatures, and more frequent and intense rainfall patterns. Therefore, the District must increase the speed and scale of adaptation initiatives to reduce the harmful impacts on residents, businesses, and the infrastructure they rely on.

The Commission's recommendations are grouped according to the following themes:

5. Better Incorporate Flood Preparedness in Standard Practices
6. Mitigate the Impacts of Extreme Heat
7. Advance Resilience and Preparedness for Businesses and Residents

RECOMMENDATION 5:

Better Incorporate Flood Preparedness in Standard Practices.

PROPOSED ACTION:

5.1 Dedicated funding sources for the DC Flood Task Force recommendations.

RELATED DISTRICT PLANS/GOALS

RDC Objective 2.4

Established in 2021, the DC Flood Task Force is tasked with identifying projects and policies that better prepare residents and businesses for current and future flood conditions. The Commission participated in the Task Force, providing input and expertise on action plans and commends its process of interagency collaboration and substance of the action-based proposals. To build on its success, the action plans must be funded with clear timelines and targets, including funding for recovery assistance, backwater valve installation, and flood mitigation infrastructure projects.

As a specific example, the FloodSmart Homes program should receive dedicated funding because it provides a clear and direct benefit to the homeowners most vulnerable to flooding. Additionally, the practice of aggregating infrastructure projects to address flood hazards should be maintained and continuously updated to reflect changing risks and

priority needs. The infrastructure project list should also be regularly updated to account for progress in project development and to incorporate new funding and financing opportunities.

PROPOSED ACTION:

5.2 Establish regulatory design standards for future climate conditions.

RELATED DISTRICT PLANS/GOALS

RDC Objective 2.1

SDC Climate Goal 2

CRDC Target 5, 9, 17 & 18

The District is projected to experience more frequent and extreme precipitation, in addition to sea level rise, due to climate change. These anticipated impacts are likely to be compounded by factors like higher groundwater levels and underground springs. To ensure that investments today will serve District communities for decades, new buildings and infrastructure assets should account for these future conditions. States and cities have proposed and adopted zoning standards that require additional protective measures in areas vulnerable to climate change impacts.[52] The District should proactively ensure that new assets can withstand future conditions and continue to benefit communities through the design life of the project.

In 2020, DOEE published the Resilient Design Guidelines which provide a step-by-step approach to assessing and mitigating current and future risks. However, the Guidelines are not integrated into regulatory frameworks. Nor are they applicable to vital infrastructure – like roads, bridges, and stormwater conveyance systems. Therefore, the Council should consider legislation calling for agency plans and regulations that account for future conditions by incorporating the principles of the Resilient Design Guidelines and expanding the design standards to fit agency needs. Importantly, this will require regularly updated District-wide climate science to inform design standards.

52 Commonwealth of Virginia Office of the Governor, Executive Order Number Twenty-Four. (2018) *Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards*; State of North Carolina, Executive Order No. 266 (2022). *Updating the North Carolina Uniform Floodplain Management Policy for State Construction*; Georgetown Climate Center Adaptation Clearinghouse, Building a Better Norfolk: A Zoning Ordinance of the 21st Century – Norfolk, Virginia (January 23, 2018); The Pew Charitable Trusts, Colorado City Revamps Flood Plain Management After Severe Flood (November 19, 2019).

RECOMMENDATION 6:

Mitigate the Impacts of Extreme Heat.

PROPOSED ACTION:

6.1 Develop a workforce safety plan, including pay for disrupted workforce due to lost hours.

RELATED DISTRICT PLANS/GOALS

SDC Built Environment Goal 3

CEDC Cross-Cutting Building Actions

As the District is projected to experience higher average summer temperatures and more frequent extreme heat days, heat-related health risks endanger significant portions of workforces critical to the District's economy, such as construction and other outdoor workers. The federal Occupational Safety and Health Administration is currently developing workforce safety standards,[53] which the District should track and adopt at minimum, if not acting sooner by developing its own standards. This may include extensions of construction hours to earlier morning and later evenings, while restricting mid-day activity, and also requiring training on heat safety and mandatory respite periods.

In anticipation of summer temperatures that are not conducive to non-emergency work, the District should prepare a strategy and funding source to aid hourly workers that face reduced workable hours. Therefore, the Commission recommends that the Council establish an occupation heat safety standard with requirements for training, shade, and respite; and a compensation fund for loss of workable hours due to extreme heat.

PROPOSED ACTION:

6.2 Direct substantial funding to implement the Keep Cool DC Strategy.

RELATED DISTRICT PLANS/GOALS

SDC Health Goal 2

CRDC Target 18

The District should support the implementation of strategies identified in Keep Cool DC[54] to mitigate the impacts of extreme heat on residents, especially increasing tree canopy coverage because of the multiple health and wellness benefits. Low-resourced and socially vulnerable communities face disproportionate impacts of extreme heat due to increased energy burdens (or lack of functioning air conditioning), higher rates of health concerns, and fewer community resources to provide assistance. Therefore, implementation of Keep Cool DC should target resources to the communities with high exposure, as identified in the Heat Sensitivity-Exposure Index.[55]

53 U.S. Department of Labor, Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings Rulemaking https://www.osha.gov/heat-exposure/rulemaking (last accessed 11/8/2022).

54 Keep Cool DC (note 25).

55 Heat Sensitivity Exposure Index, D.C. Department of Energy & Environment (updated August 11, 2022) https://dcgis.maps.arcgis.com/home/item.html?id=658b6ef020994a789bed720af7244331.

PROPOSED ACTION:

6.3 Leverage District properties for innovative "cool design" strategies.

RELATED DISTRICT PLANS/GOALS

KCDC Strategy 1, 2 & 5

CRDC Target 7

In addition to resource allocation for Keep Cool DC implementation, the District should incorporate extreme heat mitigation into its planning and design for its properties – including public housing, schools, and parks & recreation centers.

Many public-facing District properties, especially public housing, are strategically located among low-income and historically marginalized populations. Therefore, the District should leverage its existing locations to pilot innovative cool design strategies for indoor and outdoor spaces for the benefit of surrounding communities and in turn, these properties could provide a foundation for future resilience hubs.

RECOMMENDATION 7:

Advance Resilience and Preparedness for Residents and Businesses.

In addition to preparing the District's buildings and operations, adapting to climate change also requires awareness and proactive participation from residents, businesses, and critical service providers. To efficiently scale outreach programs and prepare our communities for the shocks and stresses of climate change, the Commission has identified a few approaches that can build the social infrastructure of resilience.

PROPOSED ACTION:

7.1 Encourage critical service entities, agencies, and businesses to have a Continuity of Operations Plan (COOP) and/or Emergency Action Plan.

RELATED DISTRICT PLANS/GOALS

CRDC Target 15

Anticipated increases in high heat days and flood events will likely strain critical services, increase emergency room visits due to dehydration or heat exhaustion, disrupt commuting routes due to flooded roadways, increase power outages, and create surge demand for grocery supplies. To mitigate disruptive impacts, the Homeland Security and Emergency Management Agency (HSEMA) should increase its support for businesses to develop continuity plans for the benefit of their workforce and service recipients. Currently, HSEMA supports businesses through the Business Emergency Management Operations Center, which provides assistance before, during, and after a disaster. The public-private partnership helps obtain and disseminate information through established channels of communication. Other entities like DC Water have specialized outreach and training for critical customers that would be impacted by a loss of service.

The Commission recommends that HSEMA expand this network to include more businesses, especially grocery stores in low-food access areas, and the District's utility companies' existing critical customer communications. An expanded partnership should include coordination with the Office of the Deputy Mayor for Planning and Economic Development and the Department of Small and Local Business Development to expand reach and to integrate resilience in other continuity planning processes. This work should also coordinate with other relevant agencies and administrations including DOEE's Regulatory Review Division.

PROPOSED ACTION:

7.2 Increase preparedness and recovery support resources to increase individual and community resilience.

RELATED DISTRICT PLANS/GOALS

CRDC Target 12 & 14

Many residents lack the personal savings necessary to cover expenses until they receive disaster assistance funds. Residents may need housing, transportation to school, work, or family members. To avoid lost wages or added expenses, the District should consider immediate funding support for residents that sustain damage due to flooding. Potential actions have been considered by the DC Flood Task Force and should be advanced for the benefit of residents.

Additionally, the District should establish more opportunities for residents and stakeholders to engage with District agencies and elected representatives about climate, resilience, and emergency preparedness issues affecting their community with the goal of empowering proactive preparedness among residents. This initiative should require less commitment than existing programs like CERT but encourage residents to take more action beyond their own home readiness. As an example, the DOEE regulatory review team has provided some informative presentations, in partnership with community organizations, for residents on assessing and reducing their flood risk. The District should continue and expand these partnerships for spreading preparedness practices and identify low-effort opportunities for residents to advance resilience in their community.

COMMUNITY ENGAGEMENT RECOMMENDATIONS

Building resilient communities and achieving carbon neutrality requires the engagement and inclusion of every neighborhood in the District. All residents must see their community's needs represented in the District's climate strategies and have the opportunity to shape the implementation of the innovations necessary to become truly sustainable and resilient.

The District must continue its concerted effort to rectify the centuries of discriminatory policies and disinvestments that have resulted in residents in certain parts of the District having substantially greater climate-related risk and inequitable access to resources and decision authority. The District has led community-centered models, such as the Ward 7 Resilience Hub Community Committee, which begin to dismantle the persisting inequities in the climate context, but more work is needed.

The Commission's recommendations are grouped according to the following themes:

8. Expand Public Communication and Education Programs
9. Support Community-Based Leadership in the Formation of Resilience Hubs
10. Expand and Align Workforce Development for a Green Economy
11. Foster New Partnerships in Technology and Innovation

RECOMMENDATION 8:

Expand Public Communication and Education Programs.

PROPOSED ACTION:

8.1 The executive branch should develop a coordinated communications strategy to deliver integrated climate change messaging to ensure consistency across agencies.

RELATED DISTRICT PLANS/GOALS

- RDC: Objective 2.2
- SDC: Equity, Governance Goal 1 & Energy Goal 1
- CEDC: Cross-Cutting Building Actions

The Commission recommends a coordinated communications strategy that uses plain language to explain the District's goals and actions and creates opportunities for public engagement. Messaging should relate climate change to issues affecting residents' communities and should be available in multiple languages. Similar to the campaigns to address COVID-19, the public messaging should speak to government initiatives, anticipated impacts/changes in neighborhoods, and actions the public can take to mitigate negative impacts of climate change.

Though the messaging should be consistent and recognizable, the format and delivery of the communications should be tailored to audiences and communities and be available in multiple languages. This should be achieved through qualitative[56] and quantitative data collection such as listening sessions and in partnership with schools, business leaders, business improvement districts, community leaders, and community-based organizations. Lastly, the campaign should include key performance indicators to track the effectiveness and impact of the communication strategies—including message engagement and behavior modifications—and adjust communication tactics accordingly.

PROPOSED ACTION:

8.2 Evaluate a climate education curriculum for District of Columbia Public Schools and District of Columbia Public Charter School Board.

The District is one of four states with the highest level of climate change content in their respective Departments or Board of Education policies.[57] The Office of the State Superintendent of Education's (OSSE) 2020 DC Environmental Literacy Plan emphasized the importance of climate change, as well as the broader social justice implications. The District should advance a more comprehensive climate curriculum integrated into relevant subject matters. New Jersey, for example, includes student learning standards on climate change for K-12 grade levels.[58]

OSSE should assess opportunities to incorporate increased climate education in an appropriate timeline and with consultation from teachers and parents. This work should engage with and be informed by the many important global organizations, working on public education on climate change who are headquartered in the District, such as the National Building Museum, National Geographic, the World Wildlife Fund and others.

56 One successful example of qualitative data collection was the Vision Zero safety map, which allowed residents to identify specific hazards and issues in their communities. In addition to publicizing the map online, DDOT sent representatives to public meetings, community events, and at entrances of metro stations in communities east of the river to provide opportunities for residents to contribute to the map. The effort collected over 5,000 data points from communities in all eight wards.
Vision Zero Safety. Open Data DC. (updated June 23, 2021) https://opendata.dc.gov/datasets/DCGIS::vision-zero-safety/explore.

57 Sarah Bodor, *Mapping the Landscape of K-12 Climate Change Education Policy in the United States*, North American Association for Environmental Education (June 9, 2022). https://eepro.naaee.org/eepro/resources/mapping-landscape-k-12-climate-change.

58 NJ Department of Education, New Jersey Student Learning Standards https://www.nj.gov/education/standards/climate/ (last accessed 11/8/2022).

PROPOSED ACTION:

8.3 Engage non-English speaking communities and ensure materials are available in multiple languages.

RELATED DISTRICT PLANS/GOALS

KCDC Strategy 6

The majority of climate related publications written by DOEE are in English, which can make it difficult for the 17% of District residents who speak a language other than English at home to engage with the content.[59] This stark misalignment represents an opportunity to move toward more conscious communications and increased translation services. The District should consider hiring bilingual residents to better engage with non- and limited-English speaking residents.

PROPOSED ACTION:

8.4 Leverage existing Environmental Justice screening tools, such as the Climate and Economic Justice Screening Tool (CEJST).

RELATED DISTRICT PLANS/GOALS

CRDC Target 12

RDC Objective 2.2

The District should publicize existing data tools, such as the federally designed Climate and Economic Justice Screening Tool (CEJST). Data visualization tools can help communities add context to the challenges they face and bolster their advocacy for support from decision makers. It's important to note that no tool will be able to illustrate all of the District neighborhoods' unique needs and challenges; District agencies should not use these screening tools as decision making tools.

These data visualization tools are meant to highlight existing environmental and health concerns that should be further evaluated and addressed. In the case of CEJST, users are able to see how burdened their community is with respect to eight data categories, including climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, reduction and remediation of legacy pollution, critical clean water and wastewater infrastructure, health burdens, and training and workforce development. Census tracts that are highly burdened in any of those categories are categorized as disadvantaged.[60] The CEJST platform will also play a role in competitive federal funding opportunities; familiarizing community organizations and agencies with CEJST will allow them to better quantify the specific challenges facing communities across the District and be more competitive in the federal funding process.

In addition to CEJST, the Commission recommends that District agencies publicize other relevant data tools, including any forthcoming District-developed tools, for community use

59 U.S. Census Bureau, Quick Fasts: District of Columbia. https://www.census.gov/quickfacts/DC (last accessed 11/8/2022).

60 Climate and Economic Justice Screening Tool. Methodology. Council on Environmental Quality. https://screeningtool.geoplatform.gov/en/methodology#3/33.47/-97.5 (accessed November 10, 2022).

and self-advocacy. This may include the creation of publicly accessible instructional videos that describe how to access, interpret, and filter data using these tools. The District should include explicit instructions on how community members can use environmental justice tools during public comment periods.

RECOMMENDATION 9:

Establish Resilience Hubs Across the District with Community-Based Leadership.

Resilience Hubs are community-serving facilities that support District residents by coordinating communication, distributing resources, and reducing carbon pollution while enhancing the community's quality of life. Hubs meet community-defined physical and social goals and are hosted in trusted spaces such as community centers and recreation facilities. They provide an opportunity to effectively work at the nexus of individual and community preparedness, community resilience, emergency management, climate change mitigation, and social equity while also providing opportunities for communities to become more self-determining, socially connected, and successful before, during, and after disruptions. Resilience Hubs serve communities in three operating states: Steady, Disruption, and Recovery. During their steady states, resilience hubs serve communities year-round by promoting health, providing meeting spaces, educating the community about emergency preparedness, reducing risks, and supporting workforce development.

Recommendation 9 also represents adaptation priorities to better prepare residents and communities for climate impacts. Specifically, resilience hubs can provide opportunities for residents to prepare more proactively for and respond to community hazards (proposed action 7.2). And HSEMA can advance emergency action plans or COOPs in partnership with service providers through resilience hubs (proposed action 7.1).

When disasters and stressors occur, Resilience Hubs can shift to a Disruption state, using their onsite power generation, communications technology, and community relationships to complement District and federal emergency response services. During a Disruption state, resilience hubs can serve as a known staging area and partner to distribute supplies and information to affected communities. Following a disaster, resilience hubs can support recovery by providing space for casework, educating the community about recovery resources, and conducting long term assessments of disaster recovery.

The District envisions two versions of Resilience Hubs: Community-led sites and government-led sites. Community-led Resilience Hubs include a public-serving building, operated by a non-governmental entity. In this model, the hub features are developed

and managed by a community-based organization with assistance and coordination from District agencies.

By contrast, the government-led model operates through District-managed buildings such as libraries, schools, and recreation centers. Although the day-to-day operations are led by a District agency, each resilience hub should include a neighborhood committee to advise and steer the planning of resilience activities.

PROPOSED ACTION:

9.1 The District should expand resilience hubs across the District with clear policy, protocols, and best practices.

RELATED DISTRICT PLANS/GOALS

CRDC Target 15

RDC Objective 2.3

District government must clarify the roles of HSEMA, DOEE, and Department of Parks & Recreation to deploy resilience hubs throughout the District in an expeditious manner. While this is a collaborative inter-agency challenge, roles, responsibilities, and leadership should be clearly defined. District agencies will also need to establish protocols for resilience hub operators and determine long-term funding models. Protocols should draw on the experience of the Resilience Incubator at the Faunteroy Community Enrichment Center (FCEC) and include best practices that can be used for both government- and community-led resilience hubs. The protocols and operation procedures for both community- and government-led resilience hubs should include dedicated outreach and engagement with surrounding residents to develop services tailored to neighborhood needs. Hub operators should fund existing community organizations and leaders to serve as service providers and operations partners to the maximum degree possible.

The concept of community-based resilience hubs should be initiated across the District and be advanced as a

In 2018 DOEE, engaged a group of residents and stakeholders and established the Equity Advisory Group (EAG) to advise District government on the Climate Ready and Clean Energy DC plans. The EAG recommended the development of a community resilience hub as a key priority. DOEE worked with EAG members to form the Ward 7 Resilience Hub Community Committee (RHCC) to establish the District's first community-led resilience hub at the Faunteroy Community Enrichment Center (FCEC).

The hub has received federal funding to develop steady state programming, a community-led governance model, solar generation, and building enhancements required for Disruption state operations. The Resilience Incubator at FCEC continues to be led by the community through the RHCC, with support from DOEE, and other District agencies.

One of the goals of the pilot project is to develop a replicable model for how the community-government partnership will work. This governance model will build community capacity to identify, articulate, and advocate for solutions to climate risk, a core component of community-led resilience. The models developed and lessons learned by the Ward 7 Resilience Hub should inform future iterations of resilience hubs.

decidedly community-engaged program. The District should coordinate across agencies to be responsive to community-based ideas, solutions, and unique community-based institutions, including faith-based organizations and other service providers. While the District has learned valuable insights from its pilot resilience hub in Ward 7, agencies must deploy additional hubs at a faster rate going forward.

PROPOSED ACTION:

9.2 Resilience hubs should hire and collaborate with community-based organizations.

RELATED DISTRICT PLANS/GOALS

RDC Objective 2.3

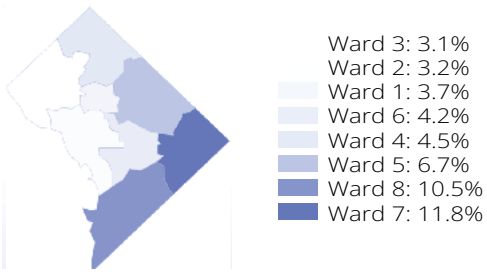
To deploy services and develop steady state programming, resilience hub operators should hire and elevate the many community-based organizations already providing services and resources to the community. This includes mission-based organizations, small business owners, and nearby residents. By utilizing existing community assets, the resilience hub can further empower the surrounding neighborhood and build connectivity among residents.

Further, resilience hub operators, government agencies, community organizations, and service providers across the District should operate as a network to share information and technical expertise to best assist residents meet their needs during all three states of operation. Operators should have regular communication and be advised of updated offerings among network members.

RECOMMENDATION 10:

Expand and Align Workforce Development for a Green Economy.

Figure 9: Unemployment by Ward (August 2022)[61]



Ward 7 and Ward 8 have the highest unemployment rates in the District.

The communities most affected by climate change also suffer from the highest unemployment rates in the District. In August 2022, unemployment rates in Wards 7 and 8 (as delineated prior to 2022 boundary changes) were double that of the District of Columbia overall, and triple that of the district's wealthiest wards. The District's climate goals require both engaging residents with greatest climate vulnerability and creating a workforce with the skill applicable to the needs of a green economy.

61 D.C. Department of Employment Services. D.C. *Labor Market Indicators: January 2015-August 2022*. [Unemployment Rate by Ward: August 2022]. (September 16, 2022). https://does.dc.gov/sites/default/files/dc/sites/does/page_content/attachments/DC%20Labor%20Market%20Indicators_August_2022.pdf.

By linking these two needs, the District can grow its climate workforce while connecting residents of disadvantaged communities to high paying jobs in the green economy. However, current green workforce development opportunities in the District are scattered across various training programs, certification providers, pathway programs, and employers. To best meet the needs of the workforce and residents of disadvantaged communities, the Commission recommends a climate workforce development strategy that includes the expansion of apprenticeships, and improved data collection to understand the needs and criteria of a successful workforce. This could also position the District to take advantage of provisions in the Inflation Reduction Act that support prevailing wages and registered apprenticeships in the clean energy sector.[62]

PROPOSED ACTION:

10.1 DOEE and partners should expand green job development programs and incorporate them into the District's climate action plan, Clean Energy DC.

RELATED DISTRICT PLANS/GOALS

SDC Built Environment Goal 3

CEDC Cross-Cutting Building Actions

DOEE's Green Pathways[63] provides a range of experiential opportunities to students, young adults, and others interested in green jobs. The Green Pathways program includes the Green Zone Environmental Program, Solar Works DC, and River Corps, and operates in partnership with the Department of Employment Services and DC Infrastructure Academy. Other regional entities, such as building trades unions, offer educational programs and training. Despite the many active facets of workforce development, the components operate in silos, without a clear connection between programs or coordination of resources.

Workforce gaps exist in green economy sectors such as high-performance building standard inspectors, HVAC and heat pump technicians, clean energy/electrification infrastructure technicians, weatherization technicians, geothermal energy technicians, and resilient design landscape architects. For example, the District's Building Energy Performance Standard is projected to need an estimated 3,000-4,000 full-time equivalent jobs for the first phase. However, an absence of large-scale training programs for green jobs presents a major obstacle to meeting the District's aggressive climate goals.

To help low-income residents participate in technical training and education opportunities, the District should consider wrap-around services such as transportation and childcare, as well as soft skills training and counseling.

62 Mike Williams, Marina Zhavoronkova, & David Madland, The Inflation Reduction Act Provides Pathways to High-Quality Jobs (September 14, 2022) https://www.americanprogress.org/article/the-inflation-reduction-act-provides-pathways-to-high-quality-jobs/.

63 D.C. Department of Energy & Environment, *DOEE Employment Opportunities* https://doee.dc.gov/node/907582 (last accessed 11/8/2022).

PROPOSED ACTION:

10.2 DOEE and partners should improve the availability and accessibility of apprenticeship programs.

Apprenticeships provide participants with paid, relevant workplace experience while providing skills and credentials that employers value. The District, with leadership from DOEE and DOES, should further expand the role of apprenticeships in coordination with climate policies and plans. This should be a central component of a climate workforce development strategy and reflected in District's strategies to achieve emissions reductions targets.

PROPOSED ACTION:

10.3 DOEE and DOES should improve data collection and dissemination on job training and pathway programs related to climate.

Without meaningful data on the contributions of the District's Green Pathways programs and the District Infrastructure Academy, the District government cannot adequately implement a climate workforce. Understanding the meaningful contributions these programs have on the green workforce is critical to supporting growing economic demands.

To build on the benefits of the District's existing job training and career pathway programs, data on outcomes should be collected and disseminated. The effectiveness of the programs can be measured by successful completion of training, job retention, or referral rates. Based on this data, the District can make more informed decisions to tailor green pathway opportunities to meet the workforce demand and provide benefits to residents.

In addition to improving the outcomes of job programs, increased dissemination of successes can heighten the uptake of the programs. By broadly advertising rates of job retention, the programs are likely to attract more interest and participation.

RECOMMENDATION 11:

Foster New Partnerships in Technology and Innovation.

PROPOSED ACTION:	RELATED DISTRICT PLANS/GOALS
11.1 Highlight market and technology innovation by providing a platform for investors, experts, and innovators.	RDC Objective 2.2

The Commission can provide valuable support to District agencies and City Council through programming such as the 2022 Knowledge Forum and Exchange. The Forum brought together thought leaders, experts, and community members to exchange innovative ideas and perspectives on climate change in the District. The Commission recommends that the Forum should be hosted annually.

PROPOSED ACTION:	RELATED DISTRICT PLANS/GOALS
11.2 Encourage collaborative partnerships with Business Improvement Districts, community-based organizations, and the private sector to better foster holistic climate solutions.	RDC Objective 2.2

District government should build more partnerships with civic organizations to harness their knowledge and capabilities. In doing so, the District should strive for the greatest diversity of thought to strengthen its response to climate change by including community organizations of varying missions. The range of perspectives can be rallied around climate solutions through pilot projects, investment opportunities, grant management, or early strategic planning ideation.

CONCLUSION

The Commission on Climate Change and Resiliency is grateful for this opportunity to serve the District of Columbia. These recommendations are advanced in the spirit of the unprecedented urgency needed to respond to the global climate crisis, and in a way which builds on the District's existing science-based actions, many of which have been recognized globally as innovative.

Appendix A: Report Methodology

With the collective knowledge of Commission members, quarterly meetings with invited speakers, subcommittee discussions, and a two-day symposium, the Commission prepared its recommendations for the Mayor's Office and the City Council. This report and its recommendations were developed in five key steps:

I. First, the Commission aggregated and reviewed the District's climate related goals across Sustainable DC, Move DC, Clean Energy DC, Climate Ready DC, and Resilient DC. By reviewing the comprehensive list of goals, the Commission was able to identify areas of strength and critical actions that have fallen behind.

II. Next, subcommittees reviewed the aggregated climate-related goals to identify priority focus areas among mitigation, adaptation, and engagement subcommittees. This review included discussion of common themes or redundancies, identification of omissions, and areas lacking progress

III. Based on the priority areas identified in Step 2, Commission staff conducted detailed research on current policies, programs, and outcomes to better assess the progress on stated goals. This research helped identify where progress could be achieved by establishing a new goal, dedicating more resources, granting more authority, or adopting new policies.

IV. Subcommittees used the research of Step 3 to discuss potential recommendations through work sessions. Commission members also held meetings with agency staff to hear where additional gaps or obstacles may be hindering progress.

V. Lastly, subcommittees presented and refined recommendations with the full Commission for review and eventual adoption. This step included several iterations of drafts

Appendix B: Forum Report

GOVERNMENT OF THE DISTRICT OF COLUMBIA

Commission on Climate Change & Resiliency

KNOWLEDGE FORUM AND EXCHANGE

January 8, 2022
10:00am – 4:00 pm

This is a public meeting being conducted in an online virtual format. Please refer to the links in each of the sessions to join the convening.

10:00am – Opening Plenary Session

Welcoming Remarks, Keynotes and Community Reflections

Link to Recording

Welcome

Uwe Brandes
Chair, DC Commission on Climate Change & Resiliency

Opening Remarks

Mary Cheh
Councilmember, Ward 3; Chair, Committee on Transportation & Environment

Brooke Pinto
Councilmember, Ward 2

Keynote Presentations

Kasha Patel
Deputy Weather Editor, The Washington Post

Tommy Wells
Director, DC Department of Energy & Environment

Community Reflections

Dennis Chestnut
FH Faunteroy Community Enrichment Center

Brenda Richardson
Friends of Oxon Hill Run Park

Bracken Hendricks
Urban Ingenuity

Cliff Majersik
Institute for Market Transformation

Moderator:
Uwe Brandes

11:30am – Panel Presentations

Clean Air	Biodiversity	Environmental Justice
Link to Recording	Link to Recording	Link to Recording
COVID-19 Impacts on Ozone Pollution in the District of Columbia **Joseph Jakuta** DC DOEE *Estimating Intra-Urban Inequities in PM2.5-attributable Health Impacts: A Case Study for Washington, DC* **Neelu Tummala** George Washington University Climate Health Institute **Kelly Crawford** DC DOEE Moderator: **Molly Rauch** Commission Member	*DC's Tree Canopy Goal: A Brief History* **Mark Buscano** Casey Trees *Climate Change Effects on Coastal Ecosystems in the Capital Region* **Luis Escobar** Virginia Tech *Climate Related Threats to Dolphins in the Potomac River* **Janet Mann** Georgetown University Moderator: **Jim Dougherty** Commission Member	*"Nothing Without Us"* **Estelle-Marie Montgomery** FH Faunteroy Community Enrichment Center **Dennis Chestnut** FH Faunteroy Community Enrichment Center *The Environmental Justice Action Network: A Model of University Student Engagement and Advocacy for Community Resilience* **Lauren Johnson** The George Washington University Milken Institute School of Public Health Moderator: **Chelsea Mervenne** Commission Member

12:30 – 30-Minute Break

1:00pm – Panel Presentations		
Transforming Buildings	**Adapting Water Systems**	**Communicating Climate**
Link to Recording	Link to Recording	Link to Recording
How Better Buildings Can Make a Better Future for the District **Lindsey Falasca** DC Building Innovation Hub *Retrofitting Existing Buildings* **Brad Dockser** Green Generation Solutions LLC *Resiliency & Disaster Relief Committee* **Regal Leftwich** AIA DC Moderator: **Anthony Kane** Commission Member	*Sea Level Rise Projections for the District of Columbia* **Nick Bonard** DOEE *Resiliency at DC Water* **Maureen Hollman** DC Water *Centering on Equity and Environmental Justice When Prioritizing Project Opportunities: A DC Water Case Study on AEG Washington 21Q1 Task Force Challenge* **Sheryl Ude** **Matt Ries** **Apera Nwora** DC Water Moderator: **Sandra Knight** Commission Member	*Teakeyland* **Aishah-Nyeta Brown** *Climate ABC* **Aileen Fuchs** National Building Museum, *Establishing a Shared Understanding of Risk and Resilience in DC* **Scott Davis** Georgetown University Moderator: **Peggy Keller** Commission Member
2:00pm – Panel Presentations		

Clean Energy Transitions	Parks & Open Spaces	Innovating Markets
Link to Recording	Link to Recording	Link to Recording
A Nuclear Capital: Why a Clean DC Must Run on Nuclear Energy **Peter Wood** ANC 1C03 *The Equitable Deployment of Solar Energy in DC* **Yesenia Rivera** DC Program Director for Solar United Neighbor *St Elizabeth's Campus Microgrid* **Bracken Hendricks** Urban Ingenuity Moderator: **Nicole Sitaraman** Commission Member	*Climate Change and the Value of Memory Forests* **Brenda Richardson** Friends of Oxon Hill Run Park *History Secured: Tidal Basin Ideas Lab* **Susannah Drake** Cooper Union School of Architecture *AWI 2.0: Setting the Stage for a Climate-ready D.C.: It's About the Anacostia.* **Ignacio Bunster Ossa** the Collaborative Moderator: **Steve Moore** Commission Membe	*Accelerating Decarbonization of Real Estate and the Built Environment* **Billy Grayson** Director, ULI Center for Sustainability and Economic Performance *Road Pricing: How Managing Demand for Driving in DC Can Advance Mobility, Sustainability, Equity and Growth* **Caitlin Rogger** Greater Greater Washington *The Price We Pay: Equitable Climate Change Solutions* **Sarah Kogel-Smucker** Environmental and Climate Attorney, Office of the People's Counsel for the District of Columbia Moderator: **Jason Turner** Commission Member
3:00pm – Closing Plenary Session		
Open Forum		
Link to Recording		
Open Forum with Members of the Commission on Climate Change & Resiliency Moderator: **Uwe Brandes**		
4:00pm – Forum Adjourned		

Appendix C: Commission Quarterly Meeting Reports

Meeting Date	Presentation Title	Agency	Sub-committee	DC Climate Themes	Commission Comments & Questions
20200312	Presentation on Heat Strategy	DOEE, HSEMA	Engagement	Community, Equity, Energy Sources & Efficiencies	• What does community engagement look like? Outreach is critical to the vulnerable populations, DOEE working on a strategy.
	Adequate Funding for Climate Related Issues	HSEMA, DGS	Adaptation, Mitigation	Preparedness	• Climate risk should be incorporated into the current and future budget planning needs
	Panel Discussion - Incorporating Climate Risks	HSEMA, DGS, DOEE	Adaptation, Mitigation	Preparedness	• Identifying climate mitigation and adaptation of natural hazards and how to best resource them effectively • Reduce emissions from the building stock and to generate a greener footprint • Need to properly educate and fund these efforts
20200618	Energy Efficiency Day	PEPCO, DOEE	Engagement	Energy Sources & Efficiencies	• Development and implementation of Energy Efficiency Day – still a need to better engage residents • From Covid, there is an increased emphasis on affordable energy infrastructure
	Proposed Floodplain Regulations	DOEE	Adaptation	Water Conservation & Restoration	• District has significant inequitable flooding risk. • Why do the proposed regulations target structures only? • Why not also include major public infrastructure investments?
	Panel Discussion: Covid and economic response	DOEE, Georgetown Law	Adaptation	Equity, Preparedness	• Equity needs to be a part of every conversation, since it has historically been too easily overlooked. • How the recovery from Covid-19 can fuel the green revolution by incorporating ideas of resilience and finding ways to build back better, more sustainably and more equitably?

20200910	Statement on Black Lives Matter and Climate Change	DCCCCR	Engagement	Equity, Preparedness	• The District of Columbia Commission on Climate Change & Resiliency affirms our commitment to working collaboratively to imagine and foster a District of Columbia which is free of systemic racism, where every person enjoys the social, economic and political power to thrive. Further, the Commission believes that shocks and stressors, like the current pandemic, are amplified by climate change and represent an even greater risk to black and brown people. Thus, the Commission recommits, with a keen sense of urgency, to sound the alarm in areas of need, while championing strategies to mitigate the damaging impacts of climate change for communities of color in the District of Columbia, especially in areas of environmental justice, health access and equity.
	Medium Duty & Heavy Duty Zero Emission Vehicle Memorandum of Understanding	DOEE	Adaptation, Engagement	Emissions, Community	• Stakeholder outreach to define what the District should include in an implementation action plan • Some local community concerns and debate where electric vehicles should be initially prioritized.
	Carbon Neutrality Plan	DOEE	Mitigation	Community, Equity, Emissions	• Areas of focus in the formulation of the plan include buildings and transportation and DOEE is establishing a dedicated Equity and Resilience Evaluation Criteria in order to help evaluate the development of proposed new policies. • Member discussion focused on the validity of offsets and the need for new building and zoning codes.
	DV-LEAP	Public	Engagement	Equity	• Nexus of climate change stressors and domestic violence. Mr. Santana asked the Commission to explicitly acknowledge domestic violence in the context of climate change stressors.
20201210	2020 Flood events in the District	DOEE	Adaptation, Mitigation	Water, Conservation & Restoration	• One of DC Water's goal is to make improvements to sewer systems in order to prevent flooding throughout the District and the mix of sewage and clean water

	DOEE Agency Update	DOEE	Mitigation	Energy Sources & Efficiencies, Emissions, Community	• Carbon Free DC strategy --> need for connecting carbon free with equity. • Extreme heat overall heat is a big issue for a lot of people, main barrier to cooling is cost factor, equity in extreme heat.
20210311	GD2018-04M stakeholder process emission to ensure proposals brought to us by the utilities comply with the Districts climate policy	Public Service Commission	Engagement	Energy Sources & Efficiencies, Emissions, Buildings	• DC is the first to put Building Energy Performance Standards (BEPS) into place
	Carbon Free DC Strategy	DOEE	Engagement, Mitigation	Preparedness, Emissions, Energy Sources & Efficiencies	• Where do we want to be in 2050 -- survey for DC residents? What is the science and analysis between potential impacts, burdens and opportunities, to be clean, in the modeling, has there been an economic feasibility component at all
	Panel Discussion	WRI, ULI, Alliance to Save Energy	Adaptation, Mitigation	Emissions, Community, Preparedness	• Significant investment requirement in natural gas pipelines to stop the leakage. Could we utilize the savings from investments in natural gas to invest in electrification? • Emphasis on the urgency of resiliency to meet the changing climate—heat and resilience overlay needs to be strong
20210521 (adaptation sub-committee)		DCCCCR	Adaptation	Community, Governance	• Primary issues we are tracking, heat and flooding. What are we missing? • How do we measure progress? • How do we establish a process of continual improvement in the space of adaptation? (Policy > Regulations > Enforcement > Performance > Comparative Analysis)
20210610	DOEE progress and analysis	DOEE	Engagement	Governance	• The SDC, Clean Energy, and Climate Ready plans are not legally enforced, but DOEE maintains consistent progress demonstrated in reports.

20210610	Carbon Free DC Strategy	DOEE	Mitigation	Emissions, community, preparedness	• The overall strategy will likely produce many ancillary health, economic and environmental benefits. What are they? How can they be factored into the design of implementation measures? • What tools and resources are needed for DC residents to align and advance this strategy? How might these tools and resources vary across the diversity of citizen stakeholders? • How does the strategy translate into an economic development opportunity and an associated workforce development strategy?
	Panel Discussion		Engagement	Governance	• What are actions to make progress on? How to measure and monitor? No mandate to provide updates. Collecting KPIs. • What are the best ways to measure? Best practices?
20210730 Adaptation	Sub-committee meeting	DCCCCR	Adaptation	Water, preparedness, equity	• Primary Topics: comprehensive planning and funding, flooding, heat, energy • Emerging Topics: WMATA resiliency Plan, Climate Education Month, Commission on Insurance and Banking, DCRA Enforcement, Equity Guidelines and Assessment, Norms and Standards, Synergies and Combined Impact • Missing from Agenda: Winds and storms, measurement of adaptation, building codes and zoning, standardization
20210730 Mitigation	Sub-committee meeting	DCCCCR	Mitigation	Emissions, Energy Sources & Efficiencies, Buildings	• Primary Topics: 2050 Carbon Free Dc, what are the underlying assumptions? SDC update, Transportation and Climate Initiative, Carbon Reporting, Pepco Climate Plan, Green Buildings • Emerging Topics: Long-term goals and definitions, DDOT (no overview briefing yet), Electrification, Jurisdictional and regional outsourcing, Capitol Power plant, gas and methane leaks, renewable natural gas, embodied energy carbon, roadmap for transportation electrification • Missing from commissions agendas: aviation, state regulatory powers, GHG scope and strategy, buildings, transportation, utilities

20210730 Engagement	Sub-committee meeting	DCCCCR	Engagement	Community, Equity	• Vision & Goals: What type of engagement would we like to have? Timeline for in-person engagement? Precedents for Goals and Objectives • EPA Community Involvement Plans • Audience: (1) Public Sector Stakeholders: Mayor, Council (2) District Residents (3) Organizations: Civic, Business, Advocacy, etc. • Awareness building
20210909	CDP	CDP, DOEE	Engagement, Mitigation	Governance	• How is the District being measured? • How is data being compared city to city? Cities each have different economic profiles, but CDP helps cities benchmark themselves for mitigation, adaptation, and resilience performance. • DC is a globally significant participant in the CDP and has been distinguished as a "Legacy Disclosure" of its carbon emissions
	Pepco Sustainability Plan	Public Service Commissions, PEPCO	Engagement, Adaptation	Governance, Equity	• The DC Public Service Commission regulates Pepco and has requested the utility report on how it intends to meet all of the District's legislated policies, including carbon neutrality. (PSC Order 20754)
20220310	MWCOG	All DC agencies	Engagement, Adaptation, Mitigation	Equity, governance	• MWCOG facilitates regional efforts and collaboration, which help scale impact and opportunities for federal investments
20220310	Meet the OPC and learn more about what they do	Office of the People's Council	Engagement	Equity, Community	• OPC represents all consumers of the DC utilities. Attend hundreds of community & ANC meetings. During the pandemic, the OPC help ensure utilities and moratoriums were in place during the uncertainties of the COVID-19 with a focus is on climate change, seeking to include in all policies, and support equitable reduction of emissions
20220108	Knowledge Forum - Air	DOEE, Office of the People's Council	Engagement, Adaptation, Mitigation	Emissions	• DMV complying on paper, but air quality issues persist and will lose many tools to improve the air quality. Number of hospitalizations for asthma attacks and lung cancer have a strong correlation with the District's most polluted neighborhoods. Stricter standards for boilers and hot water heating.

	Knowledge Forum - Biodiversity	DOEE	Engagement, Mitigation	Emissions	• Capitol Power Plant (coal burning), Methane leaks & hotspots "everywhere". NYC has new regulation requiring all new buildings be electric, not gas; DC should consider.
	Knowledge Forum - EJ	DOEE	Engagement, Adaptation, Mitigation	Water	• Ward 7 Resilience Hub as a scalable model? • 87% of the single family houses in DC's flood plain are in Ward 7.
	Knowledge Forum - Transforming Buildings	DOEE	Engagement, Mitigation	Preparedness	• DC doesn't have a 'Good Samaritan law" that will allow architects and engineers to respond to disaster events Need to Incentivize heat pumps for residential and commercial
	Knowledge Forum - Communicating Climate	DOEE, Office of the People's Council	Engagement, Mitigation	Emissions	• Largest trash transfer stations are located in Ward 5 – sources of airborne mercury pollution, medical waste, batteries. Need to establish a shared understanding of risk & resilience in DC
	Knowledge Forum - Clean Energy Transitions	DOEE	Engagement, Mitigation	Emissions, Energy Sources & Efficiencies	Recommendations included: • DC can use zoning/permitting and net zero energy buildings to advance resilient microgrids in the District's infrastructure (Saint Elizabeth's as example). DC already has mandates for building performance standards and renewable energy portfolios as a unique suite of tools. DC can also leverage financing solutions (Green Bank, DCSEU, DC PACE) to front-load building/project costs and lower life cycle operating costs. • Not practical to build new nuclear plant, but improved O&M for existing nuclear plant can be beneficial"
	Knowledge Forum - Parks and Open Spaces	DOEE	Engagement, Adaptation	Preparedness	• We need additional options (and better planning) to address extreme heat; air conditioning and tree canopies will not suffice
	Knowledge Forum - Innovating Markets	DDOT	Engagement, Mitigation	Transportation	• Regulations need to be in place to manage the demand for autonomous vehicles

20220609	Green Building Advisory Council		Mitigation	Buildings	• GBAC Embodied Carbon Working Group: subgroup of the Green Building Advisory Council to make recommendations to best mitigate carbon emissions • Developing legislative proposal on building materials and construction practices to reduce the overall carbon footprint of buildings in the District • Commission should explore coordination with the Construction Codes Coordinating Board."
	DOEE, Regulatory Review Division	DOEE	Adaptation	Preparedness	• Update on the DC Flood Task Force Summary of Task Force and preview of blue-green stormwater park system in SW waterfront DC
	DOEE, Green Building and Climate Branch	DOEE	Mitigation	Emissions	• Carbon Free DC Preview

Appendix D: A Review of Progress in Policies & Programs

REVIEW OF 2019 RECOMMENDATIONS

In 2019, the Commission reported five key findings and ten associated recommendations.

2019 Key Commission Findings:

1. Prioritization and Integration. Better coordinate, prioritize, and integrate existing resilience strategies;
2. Budget and Managerial Decision-making. Integration of resilience into management and budget (operating and capital) decisions;
3. Accountability and Oversight. Introduction of measures of accountability to support short-term actions designed to meet long-term goals;
4. Application of Climate Data. Develop greater consistency of data and assessments of climate vulnerabilities; and
5. Communications and Engagement. Improve engagement of stakeholders impacted by climate change.

2019 Key Commission Recommendations:

1. Prioritize and align the many resilience initiatives included in DC plans, and establish near-term deadlines for completing specific resilience actions that have long-term impacts.
2. Establish high level/District-wide climate change resilience indicators or metrics of success that have the necessary budget and authority to achieve outcome-based goals.
3. Adopt a resilience framework for all operating and capital budget investments and general government management decisions that prioritizes the avoidance of long-term cost and is based on contemporary vulnerability Assessments.
4. Ensure Commission has information on District agencies' existing climate mitigation, adaptation, and resilience efforts that will allow the Commission to map needs as well as play a role in agency oversight.
5. Integrate resilience planning into the District's Comprehensive Plan to create legally binding and enforceable measures.
6. Establish Resilience Standards for development in the District and directive to standardize and regularly update existing climate models and risk assessments.

7. Ensure continuity of operations for critical facilities, including non District managed facilities, and help verify readiness for extreme weather events.
8. Increase the visibility of Resilient DC and Climate Ready DC plans for broader dissemination and increased public awareness.
9. Improve social media presence to promote and educate individuals on the District's climate change and resilience actions/goals.
10. Integrate resilience actions and sustainability initiatives into community engagement, outreach, and educational programs.

KEY AREAS OF PROGRESS SINCE 2019

This section is organized into three areas of progress: Legislation, Planning and Programs & Initiatives.

District of Columbia Legislation

Comprehensive Plan Amendment Act of 2019

- Updates the Framework Element of the Comprehensive Plan to include climate change

Office of Resilience and Recovery Establishment Act of 2020

- Establishes the Office of Resilience and Recovery in the Homeland Security and Emergency Management Agency (as amended 2021)
- Establishes a Chief Resilience Officer, appointed by the Mayor, to lead the District's resilience plans and strategies, including the Resilient DC initiative

Green Food Purchasing Amendment Act of 2021

- Requires the District to estimate GHG emissions from food/beverages and take steps to reduce emissions by 25% by 2030

Flood Resilience Amendment Act of 2022

- Authorizes DOEE to establish new regulatory flood risk areas

Clean Energy DC Building Code Amendment Act of 2022

This bill seeks to decarbonize new buildings and major renovations, complimenting the Clean Energy DC Omnibus Amendment Act, which tackles emissions from existing buildings, among other things.

- Requires the Mayor to issue regulations by 2026 requiring most new and substantially renovated buildings to meet a net-zero-energy standard. It would also provide that, in the event the Mayor does not adopt such regulations by 2026, the District's existing voluntary net-zero-energy standard, "Appendix Z," will become mandatory.
- Provides a definition of "net-zero energy standard" which mandates the use of onsite renewable energy first, then building owners can procure renewable energy through off-site sources but cannot rely on unbundled RECs to satisfy the renewable energy requirement.
- In addition, the bill would require the Department of Buildings to arrange an audit of buildings subject to these regulations every three years to determine the proportion of buildings that comply with the regulations on an ongoing basis.
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Climate Commitment Amendment Act of 2022

The Climate Commitment Act accelerates and codifies the District's greenhouse gas emissions goals and establishes new goals for government operations.

- Government operations: the law requires the District government to, among other things:
    - Reduce emissions from its operations to net-zero by 2040;
    - Prohibits installing fossil fuel-burning space- or water-heating appliances beginning in 2025;
    - Requires purchase or lease only zero-emissions vehicles beginning in 2026;
    - Requires DOEE to report annually on the District's progress toward our emissions reduction commitments.
- City-wide: the bill requires the District to reduce its GHGs by 60% below 2006 levels by 2030 and to achieve carbon neutrality by 2045. The previous non-binding goals were a 50% reduction by 2032 and carbon neutrality by 2050.

References & Resources

Global Climate Resources

Fourth National Climate Assessment (U.S. Global Change Research Program, 2018)
Climate Change 2022: Impacts, Adaptation, and Vulnerability (IPCC 2022)

DC Plans and Strategies

DC Comprehensive Plan Update (Office of Planning 2021)
Progress Reports: Sustainable DC, Climate Ready DC, & Clean Energy DC (DOEE 2022)
Resilient DC (HSEMA, 2019)
Resilient DC Progress Report (DC, 2022)
Keep Cool DC (DOEE 2022)
Transportation Electrification Roadmap (DOEE 2022)
Carbon Free DC (DOEE)

Mitigation Resources

DC Greenhouse Gas Inventory (DOEE 2020)
Washington, D.C. Energy Profile (U.S. Energy Information Administration 2021)
2020 State Energy Efficiency Scorecard (ACEE 2020)
District's Electric Vehicle Infrastructure Deployment Plan (DDOT 2022)

Adaptation Resources

D.C. Flood Task Force
Heat Sensitivity Exposure Index (2022)
Climate Projections (DOEE 2016)

Community Engagement Resources

Recommendations from the Equity Advisory Group in Far NE Ward 7 (Georgetown Climate Center 2018)
DC Resilience Hubs
Resilience Hubs Resources


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