CLEAN ENERGY DC

A CLIMATE AND ENERGY PLAN FOR THE DISTRICT OF COLUMBIA

SUMMARY REPORT

DRAFT OCTOBER 2016

PRODUCED FOR:

DEPARTMENT OF ENERGY & ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

WHAT IS CLEAN ENERGY DC?

Clean Energy DC is the District of Columbia's new climate and energy plan. It explains how the District will use forward-looking energy policies to achieve its greenhouse gas (GHG) emissions targets for 2032, while also encouraging innovation, efficiency, and resiliency. Clean Energy DC re-imagines what a 21st century energy system could be, but is also pragmatic and focused on achieving tangible goals. Clean Energy DC clearly identifies what actions need to be taken between now and 2032 in our buildings, our energy infrastructure, and our transportation system to meet the District's ambitious GHG reduction targets. It lists 55 actions that we as a community can do today, next steps for each, and what we will need to do in the future.

Clean Energy DC is a plan, and a vision of what the District could be. It is a bold idea of the District as a leader in fighting climate change, one that requires the support and engagement of District residents and businesses for it to be successful. Re-imagining the District's energy system is a big task. That is why this plan is just the beginning. Many of the actions and strategies will require further study. The people and businesses who will be most affected by these actions will have an active and important role in designing the next steps. Clean Energy DC is the place where all of this work starts to come together.

Clean Energy DC re-imagines what a 21st century energy system could be, but is also pragmatic and focused on achieving tangible goals.

WHY DO WE NEED A PLAN?

Climate change scientists have called for a reduction in the GHG emissions that drive climate change by 80% by 2050 to avoid an increase in global temperatures of more than 2°C. This is because an increase of 2°C has been shown to be the most that the earth's ecosystem can handle while avoiding the worst impacts of climate change. However, even a 2°C increase in global warming can severely impact our societies and ecosystems. So, while this Plan outlines necessary actions up to the year 2032, a longer-term effort will be needed to limit the risk of serious climate change impacts on the District's economy and prosperity. Clean Energy DC will also work in concert with Climate Ready DC, the District's plan to adapt to the impacts of a changing climate on our infrastructure, neighborhoods, and most vulnerable residents (see Box 1).

Clean Energy DC will also work in concert with Climate Ready DC, the District's plan to adapt to the impacts of a changing climate.

Box 1: Climate Ready DC

While Clean Energy DC is a plan that contributes to the global effort to avoid the worst impacts of climate change, the District is already experiencing the impacts of climate change. The District of Columbia's climate adaptation plan, **Climate Ready DC**, identifies the current and future impacts of a warming climate on the District's infrastructure, facilities, and residents. It outlines 77 actions the District will take to ensure the security of District residents and the prosperity of its economy in the face of rising summer temperatures, more heavy rainfall events, increased flooding, and other changes in climate.

For more, see http://doee.dc.gov/service/climate-change

As a result of climate change, the District will experience:

- Much warmer average temperatures
- Up 2-3 times as many dangerously hot days
- Longer, hotter, and more frequent heat waves
- More frequent and intense heavy rain events
- Higher tides as a result of rising sea level

Reducing GHG emissions helps lessen these impacts.

WHAT IS THE DISTRICT'S GREENHOUSE GAS REDUCTION GOAL?

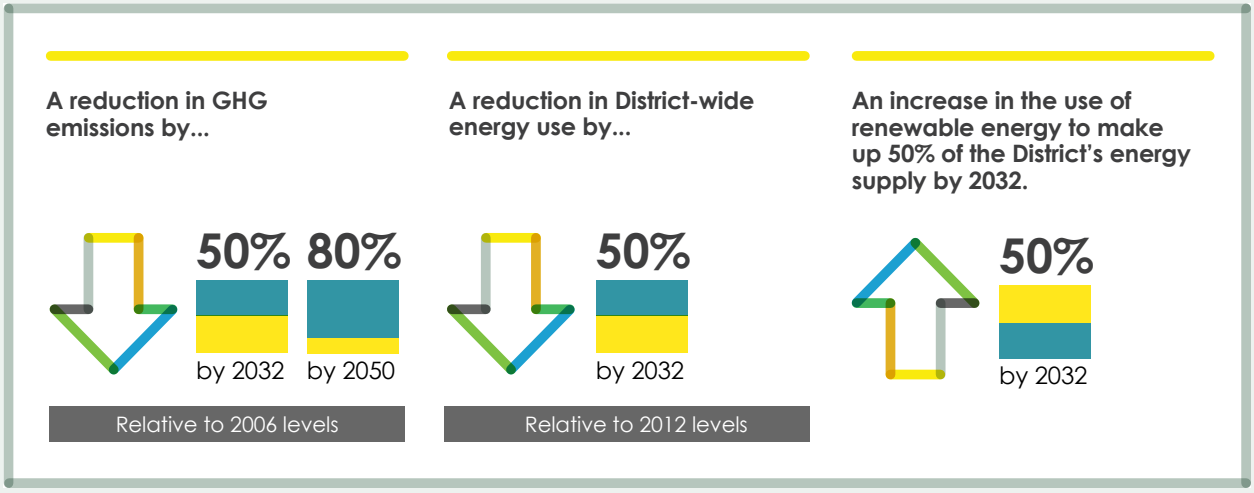
Specifically, Clean Energy DC is the District Government's proposal for how we will reduce the District's GHG emissions by 50% below 2006 levels by 2032, and 80% below 2006 levels by 2050 (see Figure 1). This target was originally identified in 2013 in Sustainable DC, the District's sustainability plan (see Box 2). This goal is consistent with the global effort to fight climate change as identified in the 2015 Paris Agreement. Achieving a 50% reduction in GHG emissions by 2032 is essential to putting the District on the path to further reduce its GHG emissions by 80% by 2050.

Sustainable DC also identified two additional targets:

1) increase the use of renewable energy to 50% of the supply by 2032, and
2) reduce energy use by 50% by 2032.

While these are also important goals, Clean Energy DC focuses on reducing our GHG emissions. This is because by focusing on reducing emissions, we can address all three of the District's energy goals, but still put the effort to limit the impacts of climate change at the top of the list (see Figure 2).

Figure 1: The Sustainable DC Climate and Energy Targets



Box 2: Sustainable DC

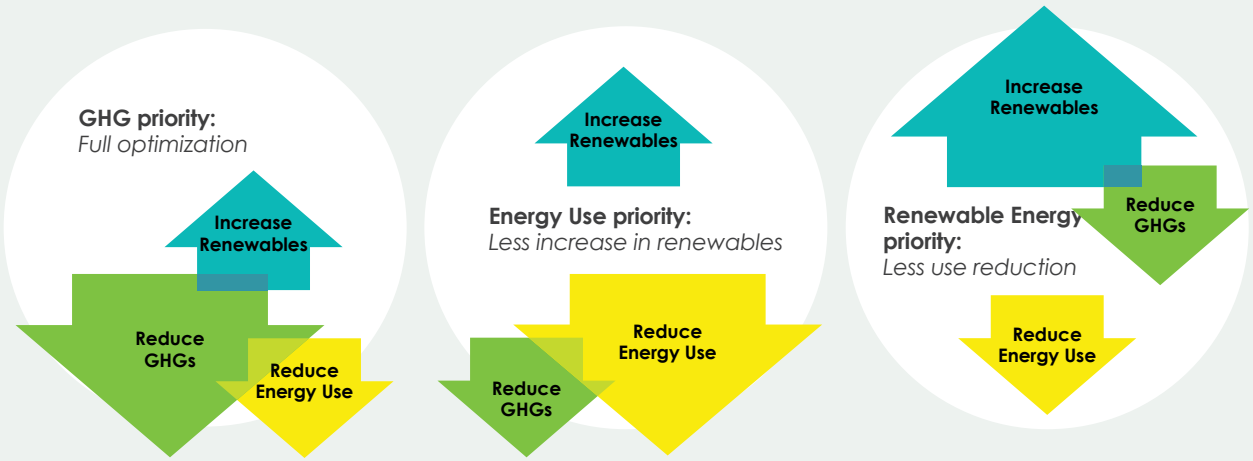
The District has already laid out several ambitious goals for ensuring the sustainability of the city in the **Sustainable DC** Plan, which aims to make the District the healthiest, greenest, and most livable city in the nation by 2032. Released in 2013 following broad public engagement, the Plan outlines several goals and targets to be met by the year 2032 to improve the areas of:

- Jobs and its economy
- Health and wellness of District citizens
- Equity and diversity
- Climate change and the environment

The Sustainable DC Plan's goals and targets complement Clean Energy DC. These include improvements to transportation, building energy efficiency, energy supply, and energy infrastructure.

For more, see http://www.sustainabledc.org

Figure 2: Benefits of Prioritizing the Reduction of GHG Emissions



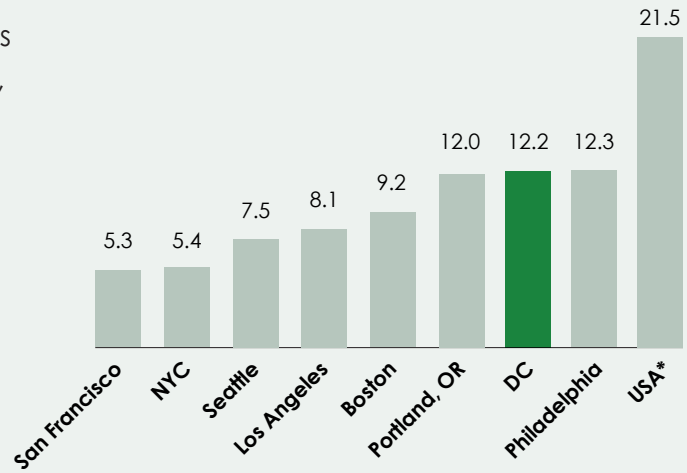
HOW WILL WE GET THERE?

The success of the District's efforts to reduce GHG emissions depends a lot on where we get our energy from, and how we use it. The use of fossil fuels – like coal, oil, and natural gas – is the largest source of GHG emissions that humans produce. Fossil fuels are still used to generate the electricity that we use in the District to power our appliances, heat our buildings, and power our motor vehicles. Gradually phasing these fossil fuels out of the District's energy supply is essential to achieving our climate action goals. By creating Clean Energy DC, the District has laid out a plan to manage this important transition in a way that is both innovative and pragmatic.

ENERGY USE AND EMISSIONS IN THE DISTRICT TODAY

Overall, the District of Columbia is comparable to other east coast cities when it comes to per capita GHG emissions. Its "emission profile", or where its GHG emissions come from, is similar to those of other large, dense cities, such as Philadelphia and Boston. Not surprisingly, it also produces more emissions than cities that have low-carbon energy sources instead of fossil fuels – like hydroelectric power – or those that are located in warmer, milder climates (see Figure 3).

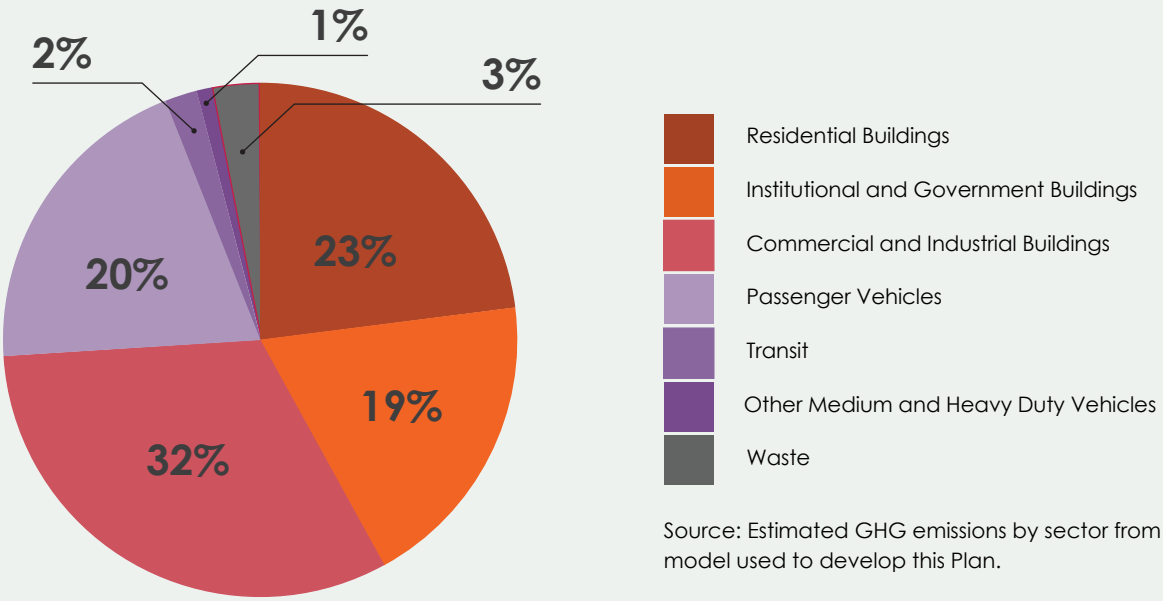
Figure 3:
GHG emissions per capita among leading U.S. cities, 2015 *(in metric tons carbon dioxide equivalent)*



Source: Carbon Disclosure Project's Citywide Emissions 2015 dataset, https://data.cdp.net/Cities/Citywide-Emissions-2015-Map/rdx8-qzui *USA figure is for 2014.

The three main sectors of the District's energy system—buildings, energy supply, and transportation—contribute different amounts to the District's total GHG emissions. In 2015, the energy consumed in buildings was the largest source of emissions, contributing 74% of the District's total GHG emissions. The same year, the transportation sector accounted for 23% of the District's GHG emissions (see Figure 4).[1]

Figure 4: Modeled proportion of GHG emissions by sector, 2015



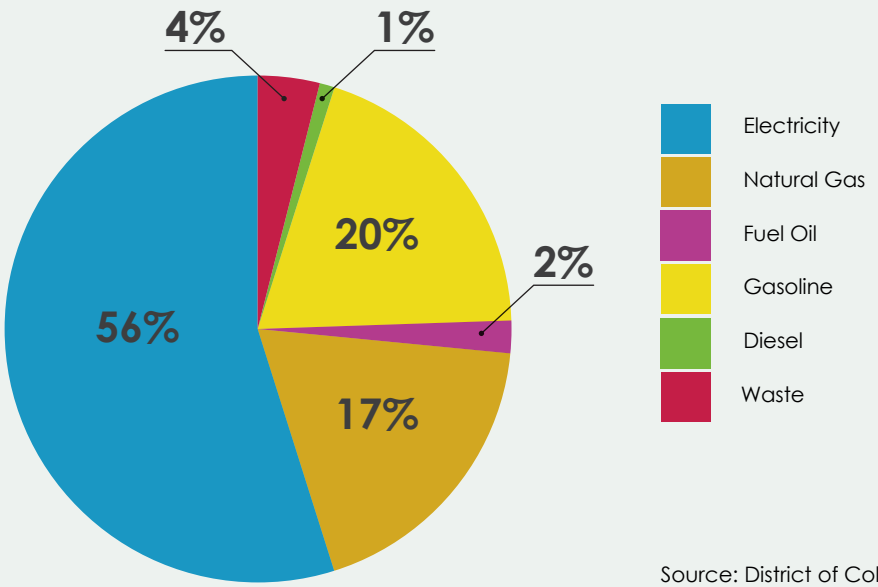
Source: Estimated GHG emissions by sector from the model used to develop this Plan.

This imbalance between the District's building and transportation sectors does not mean that the District's buildings are built poorly compared to those in other, similar cities. Rather, it means that the District transportation sector generates much fewer GHG emissions than the national average. This is because a high number of District residents use public transit, and enjoy living in the District's many walkable and bikeable neighborhoods. The 3% of the District's emissions that are left over after we look at buildings and transportation come from solid waste, or the emissions that are released when the garbage in our landfills begins to break down. While Clean Energy DC does not address these emissions in this version of the Plan, the District will continue to look for opportunities to reduce these emissions in the future.

[1] Based on all vehicle miles traveled in the District, regardless of origin or destination. Data supplied by the Metropolitan Washington Council of Governments.

A look at the District's emissions profile also shows what sources of energy are contributing to its total emissions. In 2012, the use of electricity was the biggest contributor, representing 56% of the District's total emissions (see Figure 5). The use of gasoline in cars and the use of natural gas to heat buildings were also important contributors, making them important areas for Clean Energy DC to address.

Figure 5: Proportion of GHG emissions by source, 2012



Source: District of Columbia Greenhouse Gas Inventory Update 2012-2013, *forthcoming*.

Box 3: The Clean Energy DC Plan Approach

Clean Energy DC identifies three major sources of the District's GHG emissions:

1 **Buildings** 2 **Energy Supply** 3 **Transportation**

For the Plan to succeed, we must find ways to cut a significant amount of GHG emissions from each of the three sources.

1 BUILDINGS

For the building sector, the most effective way to cut a significant amount of GHG emissions is by designing new buildings and upgrading existing buildings to be highly energy efficient, and to generate on-site clean power, such as solar power. Actions to cut emissions from the building sector include a collection of strategies that will eventually require all new buildings to be "net-zero" in their energy use and emissions generated. In addition, as the amount of new buildings built each year is very small relative to the total District building stock, the Plan also calls for significant cuts to energy use and GHG emissions from the District's existing buildings through a diverse set of efficiency programs that expand upon our current practices. Many supporting actions that will accelerate change in the entire building sector are also proposed.

Many supporting actions that will accelerate change in the entire building sector are also proposed.

2 ENERGY SUPPLY

For the energy supply sector, the Plan builds upon the current Renewable Portfolio Standard. The Plan recommends that energy suppliers serving the District should buy more electricity generated through renewable sources. The plan also lays out strategies for increasing local renewable energy generation in the District, and encourages the development of innovative neighborhood-scale energy resources within the District. Such development will not only increase the District's ability to use its own clean power, but it will also provide efficient energy by avoiding the need for costly and inefficient power delivered by transmission lines. These local energy resources are also more resilient, which means that they can avoid, or quickly recover from, power interruptions or outages.

To make sure the District's electricity infrastructure can handle these changes, this section also outlines actions that focus on modernizing the District's electricity distribution system. Modernizing the energy system will allow the District to transition to solar and other renewable energy sources, while ensuring the system's reliability. It will provide new ways to reduce energy use, save costs, and help make the power grid more resilient.

Modernizing the energy system will allow the District to transition to solar and other renewable energy sources.

3 TRANSPORTATION

Finally, for the transportation sector, actions are dedicated to encouraging the use of electric vehicles. These actions build upon the District's existing transportation plan moveDC, which outlines how the District will encourage its residents to walk, bike and use mass transit, rather than to use vehicles that are powered by fossil-fuels (see Box 4).

Box 4: The moveDC plan

Clean Energy DC will work in tandem with **moveDC**, the District's comprehensive transportation plan led by the District Department of Transportation (DDOT). It envisions the District's future as a city with a world-class transportation system. It has been designed to make the District a more livable, sustainable, attractive and prosperous place to live by improving the quality and access to multimodal forms of transportation. It is built on the SustainableDC 2032 transportation goals of increasing the share of public transit, biking, and walking to 75% of all trips within the District, and reducing commuter trips by car to 25%. moveDC's 2-year Action Plan outlines the key steps that the DDOT must take to realize its vision.

The 36 actions in moveDC are grouped under a number of key areas that include the following:

- Implement capital investments in multimodal infrastructure and the maintenance of existing transportation assets;
- Advance studies for new critical capital investments;
- Implement existing transit policy recommendations;
- Initiate new citywide programs to facilitate multimodal travel and improve safety;
- Improve transparency and access to transportation data;
- Expand interagency and stakeholder coordination; and
- Address funding and financing gaps for critical investments.

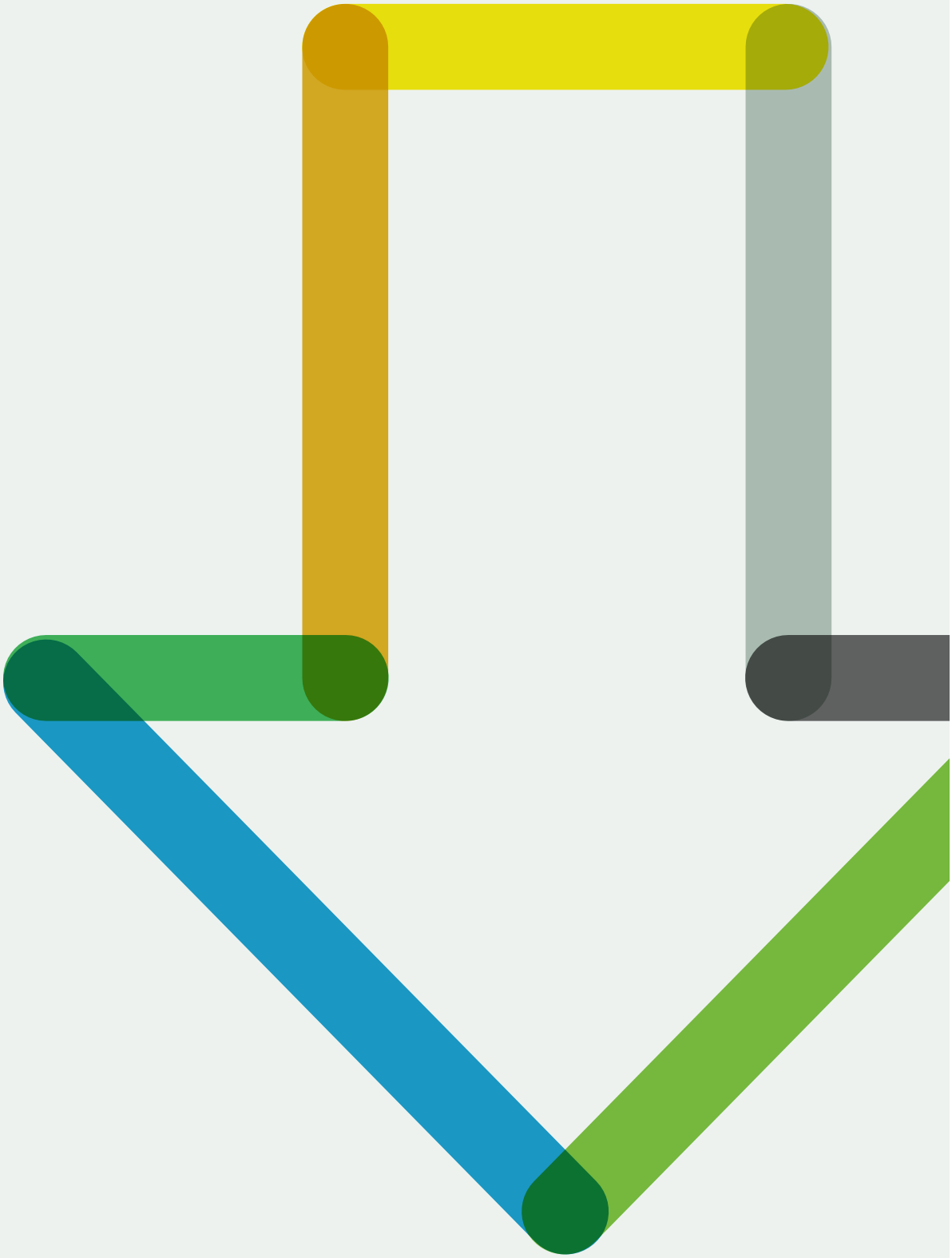
For more information, see http://www.wemovedc.org/

THE IMPACT OF CLEAN ENERGY DC

Altogether, the actions from the building, energy supply, and transportation sectors can achieve a **51%** reduction in the District's GHG emissions relative to the year 2006 (see Figure 5, Table 1). The 51% figure was calculated by comparing the combined impact of key actions laid out in the Plan, to a future without a Clean Energy DC Plan and without any significant actions to fight climate change--also known as the "Business-As-Usual" (BAU) scenario.

Clean Energy DC's roadmap to cut GHGs by 51% also provides an **18%** reduction in total site energy use, and increases renewable energy to **32%** of total energy supply. With the support of District residents and businesses, the policies and programs outlined by Clean Energy DC could help transform the District's energy system to one that is truly sustainable.

51%



ESTIMATED GHG SAVINGS

Figure 6 shows the impact of the key actions proposed in Clean Energy DC on the District's total GHG emissions. A "Business-As-Usual" (BAU) future in which none of the Clean Energy DC actions are implemented is represented by top line of the different colored wedges. Each group of actions, represented by the colored wedges themselves, show how much they will reduce emissions from the Business-As-Usual scenario. The figure shows that if they are implemented together, the Clean Energy DC actions can meet the District's target of lowering emissions by 50% from the baseline year of 2006 by 2032.

Figure 6: GHG Reduction Projections by Strategy

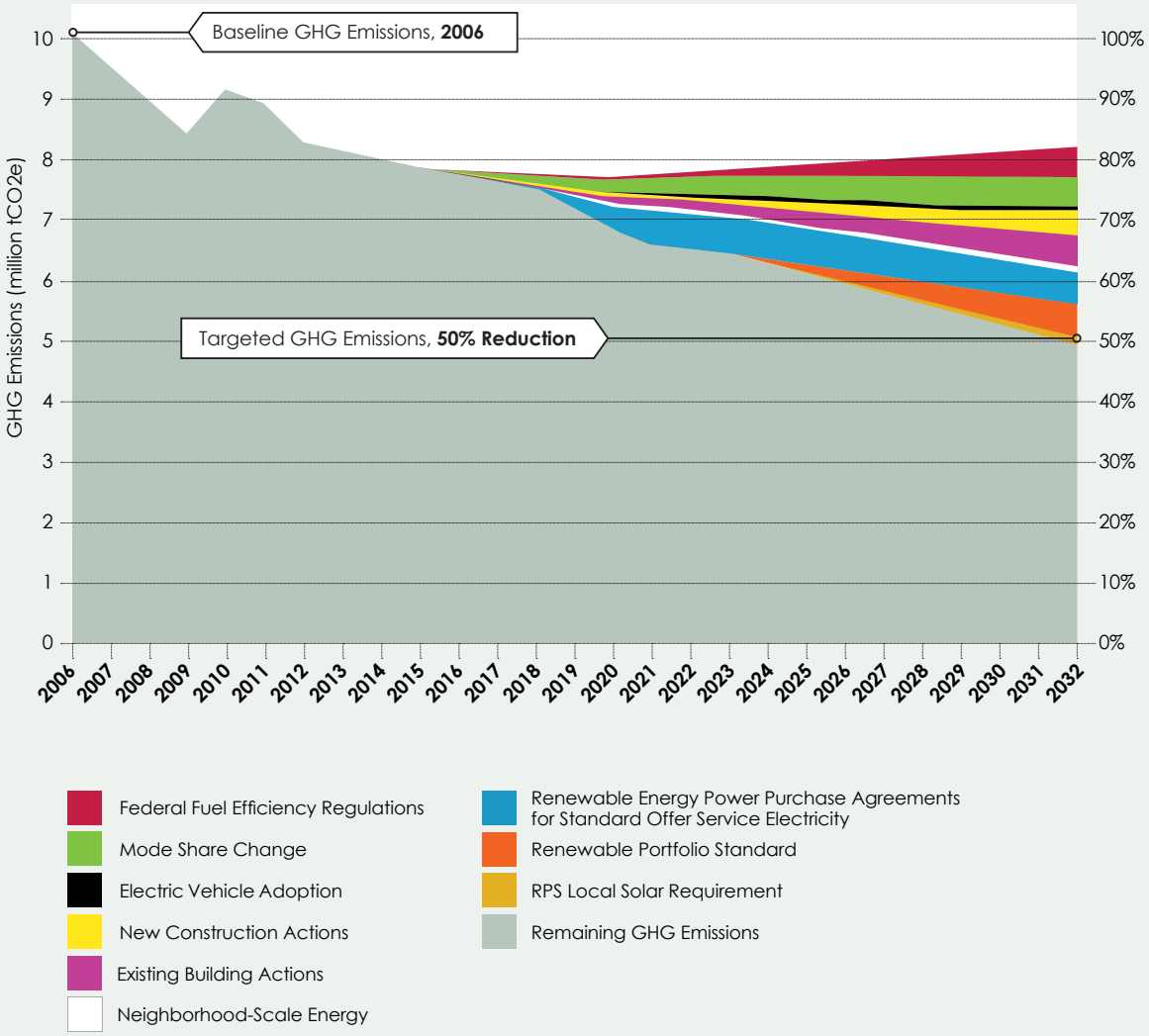
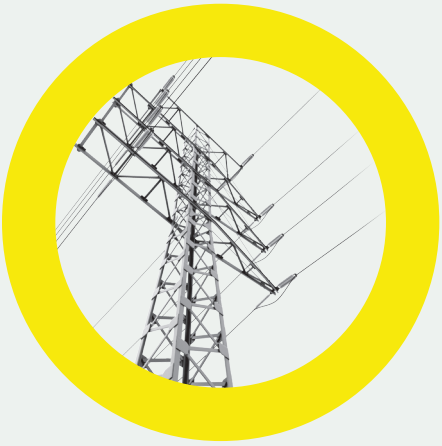


Table 1 shows the impact each action will have on reducing the District's GHG footprint by 2032. Each action is shown with the amount and percentage of GHG emissions that are projected to be avoided by 2032 as the result of each action. The actions add up to a 39.8% reduction in GHGs in 2032 relative to the Business-As-Usual projection. Because of the GHG reductions that already occurred from 2006 through 2015, this is equivalent to a 51% reduction relative to 2006 emissions levels. (Similar charts for total energy use and renewable energy growth can be found in the full document.)

Table 1: Summary of GHG reduction actions

GHG Reduction Wedge	GHGs Reduced from 2032 BAU (tCO_2e)	Percent GHGs Reduced from Total 2032 BAU
Federal Fuel Efficiency Regulations - Corporate Average Fuel Economy (CAFE) Standard	473,000	5.8%
Walking, Cycling and Public Transit (mode share change)	528,000	6.4%
Electric Vehicle Adoption	34,000	0.4%
Getting to "Net-Zero" in New Construction (New Construction Actions)	430,000	5.2%
Energy Efficiency in Existing Buildings (Existing Buildings Actions)	544,000	6.6%
Neighborhood-Scale Energy Systems	44,000	0.5%
Prioritizing low carbon energy in electrical Standard Offer Service (Power Purchase Agreements for Standard Offer Service)	543,000	6.6%
Mandating electricity suppliers to Procure Renewable Energy (Renewable Portfolio Standard)	581,000**	7.1%
Renewable Portfolio Standard's Local Solar Requirement	87,000**	1.2%
Total GHGs Avoided vs. 2032 BAU	3,277,000	39.8%
Total GHGs Reduced vs. 2006 Baseline	5,664,000	51%

BUILDINGS



ENERGY SUPPLY

TRANSPORTATION

KEY ACTIONS: BUILDINGS

New Construction

To achieve the goal of reducing its GHG emissions by 50% by 2032, the District must begin to shift its buildings away from using fossil fuels (e.g., natural gas, coal, oil). This can be achieved by using a "net-zero energy" building code that gradually lowers the total amount of emissions a new building can produce and requires onsite renewable energy. This will be phased in by building sector and over time until all new buildings produce enough energy to meet their needs, thus reducing the amount of emissions a building produces to zero. To succeed, the District will need to provide education and training to people who own or manage buildings. The District has already made substantial progress in reducing energy use through its construction codes – this recommended action would build upon these existing efforts.

The District Government will also need to take the initiative and construct its own buildings to this new standard as a way of showing its commitment and building community support. By improving the performance of any new buildings constructed in the District, the District can avoid 5.2% of the GHG emissions projected for 2032.

Existing Buildings

While the use of net-zero building codes will move new buildings away from fossil fuels, existing buildings also have to be improved. This means that a significant number of existing buildings will have to be renovated to increase their energy efficiency and reduce their reliance on fossil fuels. These renovations or "retrofits," will need to build on the many successes the District has already had in this area, including its building energy benchmarking policy, and the creation of the DC Sustainable Energy Utility. Clean Energy DC shows that by retrofitting one in five District buildings to achieve a 30% reduction in energy use, the District can avoid 6.6% of its projected 2032 GHG emissions. The Plan also calls for a suite of financial, technical, and educational assistance that will be essential to achieving this goal.

KEY ACTIONS:
ENERGY SUPPLY SYSTEM

Clean and Renewable Energy Supply

To achieve its GHG emissions reduction target, the District must increase the amount of renewable energy that is supplied to the District. To do so, the District will have to design its Renewable Portfolio Standard (RPS) to require electric suppliers to provide an increasing amount of renewable energy to District residents and businesses. Under the current RPS, electricity suppliers must buy 50% of its power from renewable sources by 2032, with 5% coming from local solar power. The Plan expands upon this law to propose new RPS legislation that will require 100% of the District's electricity to be supplied from renewable sources by 2050. Through the RPS, the District can avoid up to 8.3% of its projected 2032 GHG emissions. However, a key issue here will be to ensure that while more renewable energy is being added to the District's energy mix, electricity rates remain affordable for both District businesses and residents. The District should also help to increase the number of solar energy installations within the District using a targeted solar proliferation strategy and solar energy generation requirements.

In addition to these changes, Clean Energy DC also recommends that the District explore changes to the current Standard Offer Service that would increase the purchase of renewable energy. The Standard Offer Service is the energy contract—currently managed by Pepco—that is offered to customers who do not choose their own suppliers. The District could explore replacing Pepco's current offering—which includes a significant amount of fossil fuels—with a mix of long-term and short-term contracts that can provide more renewable energy. If done carefully, such a set of contracts may significantly reduce Standard Offer Service energy costs for these consumers as well. By increasing the use of renewable energy in the Standard Offer Service, the District can avoid 6.6% of its projected 2032 GHG emissions.

The District should also explore where neighborhood-scale energy systems could be expanded or installed. There are a few different examples of neighborhood-scale energy systems, such as microgrids and thermal energy districts. The term "microgrid" can have many definitions, but it generally refers to a relatively small power distribution system with enough onsite generation to provide power to a number of buildings when the local utility's power system fails. A thermal energy district generally refers to an

area or a number of buildings that can be heated and cooled using a single, centralized piping system. Innovative thermal energy districts have recently begun to emerge, using renewable energy sources such as river water, geothermal energy or heat transferred from sewer pipes. At the current level of effort, neighborhood-scale energy systems can help the District avoid 0.5% of its projected 2032 GHG emissions, while setting the stage for greater savings to come.

Electricity System Modernization

An electricity distribution system with a high number of local renewable energy systems will require a modernized electricity system. Modernizing the system is necessary to achieve the following goals: (1) allowing more renewable energy to be generated within the District, (2) improving the efficiency and reliability of the energy we use, (3) improving the resiliency of our energy system, and (4) providing economic benefits to District residents and businesses by reducing the need for costly utility infrastructure investments where possible. As we enhance our ability to locally generate and store energy easily and flexibly from multiple sources and locations across the District, we will save energy costs and reduce the need for traditional utility infrastructure such as substations, poles, and wires.

This change in the way we use energy will also require new financial and regulatory structures that can support these distributed energy resources. Distributed Energy Resources, or DER, refers to a group of tools and equipment that District residents and businesses can use to generate energy or manage their energy use. DER generally refers to: local generation capabilities such as rooftop solar power; energy storage, such as the use of batteries; energy efficient equipment, such as air-source heat pumps; and methods of controlling when to use energy such as smart thermostats.

Some of these actions are already underway through a regulatory proceeding overseen by the District of Columbia Public Service Commission (DC PSC). This work will help to make the District's energy system more efficient, resilient, and sustainable. Importantly, this work will promote the use of neighborhood-scale energy systems that lower costs, reduce emissions, and increase resilience against power interruptions or failures. While electricity system modernization does not lead to quantified GHG savings itself, it will facilitate the GHG savings in other sectors.

KEY ACTIONS: TRANSPORTATION

Mode Share Changes

Finally, large reductions in GHG emissions from the transportation sector will be needed to meet the District's GHG reduction targets. This means changing the way we move around the city by increasing our use of public transit, biking, and walking. The District has made efforts to get people out of cars and using transportation that do not use fossil fuel, and continues to advance this goal. In addition, the District is also exploring methods to reduce emissions from its own fleets. Using the District's existing transportation actions on mode shift found in moveDC, the District can avoid 6.4% of the GHG emissions projected for 2032. Additionally, existing federal fuel economy standards are projected to avoid another 5.8% of the GHG emissions projected for 2032. As specific actions regarding moveDC and the federal fuel economy standards are beyond the scope of this plan, Clean Energy DC does not specify further recommendations.

Electric Vehicle Readiness and Adoption

Aside from encouraging different transportation options, the District should also encourage its residents to move from traditional vehicles to high efficiency hybrid and zero-emission electric vehicles. As other areas of the transportation sector are already covered by other District plans, Clean Energy DC zeros in on this missing piece of vehicle electrification. The recommendations in Clean Energy DC will provide support for this shift through policies and actions that provide the infrastructure needed to support electric vehicles, such as public charging stations. These recommended actions also focus on the need to make it easier for people to adopt electric vehicles, using financial and other appropriate incentives. While the District cannot directly influence the kind of cars people buy, it can help to increase the use of electric vehicles in car-sharing and other private sector fleets. Because of the slow turnover of private vehicles, if actions to promote electric vehicles are not initiated soon, it will be much harder for the District to achieve its goal of cutting GHG emissions by 80% by 2050. Through actions to increase electric vehicle adoption, the District can avoid 0.4% of the GHG emissions projected for 2032, while laying essential groundwork for much larger GHG reductions by 2050.

THE FULL SET OF ACTIONS

The following list provides a comprehensive overview of all Clean Energy DC actions:

NEW CONSTRUCTION

Update Building and Energy Codes

NC.1 Establish a pathway to net-zero building codes between 2020 and 2026

Use the 2016-17 and 2020 building code updates to establish a path to net-zero energy performance in all residential and commercial buildings by 2026. This will start with a net-zero energy requirement for new construction of single-family and small multifamily buildings in 2020, and complete with a net-zero energy requirement for commercial and large multifamily buildings by 2026.

Provide Incentives

NC.2 Provide a net-zero energy incentive package

Offer a financial incentive package to support building developers and owners in the transition to net-zero energy buildings.

Leadership and Catalyzing Change

NC.3 Issue a net-zero energy innovation request to the Federal Government

Lobby the Federal Government to adopt the same level of building energy performance as the District Government, and align the District's path to net-zero energy buildings with Federal Executive Orders 13693 and 13514.

EXISTING BUILDINGS

Energy Efficiency Incentives and Management

EB.1 Increase access to building energy performance data

Improve the ability of building energy performance organizations to access the information they need to identify and target buildings with the highest potential for energy savings.

EB.2 Increase DCSEU flexibility

Increase the ability of the DC Sustainable Energy Utility (DCSEU) to coordinate with other organizations, integrate into existing finance programs, support projects with long-term savings, improve compliance with building codes, and track GHG reductions.

EB.3 Provide the incentives necessary to operate a District-wide energy retrofit program

Provide the necessary incentives, resources, and training to implement a District-wide energy retrofit program for existing buildings.

EB.4 Coordinate District efficiency and finance programs

Coordinate any new or existing energy conservation incentives and financing programs to make sure that they are being used in the most efficient way possible.

EXISTING BUILDINGS

Policy and Program Recommendations to Increase Energy Efficiency in Existing Buildings

EB.5 Lead by example in District Government operations

Lead the way forward by implementing a deep energy retrofit program on District Government buildings. Follow this with the development of a net-zero retrofit program across the District Government's building stock.

EB.6 Implement a Building Energy Performance Standard

Implement a Building Energy Performance Standard that requires the District's least efficient buildings to improve their energy performance, and offers multiple compliance paths.

EB.7 Drive energy efficiency at tenant build-out

Provide financial and other incentives to encourage efficiency improvements when new commercial tenants come into a building.

EB.8 Encourage the adoption of green leases through education and training

Encourage building owners and tenants to adopt green leases by providing stakeholder training, education, and recognition programs.

EB.9 Develop a virtual energy audit program

Establish a virtual energy audit program for all building types in the District that will make it easier for building owners and managers to understand and act on areas where their buildings need improvement.

CROSS-CUTTING BUILDING ACTIONS

Increasing and Improving Access to Funding and Financing

CCB.1 Establish a Green Bank and Increase Energy Efficiency Funding

Increase the funding provided for energy efficiency and renewable energy projects in the District by creating a green bank and increasing funding for the DCSEU and related programs.

CCB.2 Enhance the District's Property Assessed Clean Energy (PACE) financing program

Increase the effectiveness of District's existing program to finance energy efficiency upgrades and renewable energy installations for commercial buildings, and implement a residential program to serve the residential building market.

Policy and Program Recommendations

CCB.3 Increase code compliance in all buildings through Smart Code Enforcement

Increase the level of compliance of new and existing buildings with the building energy code, green construction code, and related codes.

CCB.4 Incentivize and require submetering

Change laws and regulations to allow residential building owners to meter the energy consumption of residential tenants on an individual basis to better understand and reduce energy use, and phase-in requirements for commercial building owners to meter the energy consumption of commercial tenants.

CCB.5 Develop a centralized online platform for residential energy efficiency programs

Create a centralized online tool to provide District residents with resources and information on residential energy efficiency programs, including any available incentives or financing.

CROSS-CUTTING BUILDING ACTIONS

Education and Training

CCB.6 Develop a deep energy efficiency and renewable energy education series

Partner with local organizations to create a local education series about net-zero energy and high performance buildings.

CCB.7 Host energy efficiency and renewable energy tours

Sponsor local and international tours of examples of deep energy efficiency and community renewable energy.

CCB.8 Partner to support training and certification of building contractors and managers

Partner with building construction unions and trade associations to help them prepare for a transition to high-performance buildings. Support the creation of a job skills program focused on next- generation building technologies.

CCB.9 Expand existing energy conferences to provide additional focus on net-zero energy buildings

Host a conference on net-zero buildings and energy innovation with a local partner.

CCB.10 Integrate home energy performance information

Support ongoing initiatives to promote the energy performance of residential buildings, including adopting a home energy score for single-family and small multifamily homes.

Leadership and Catalyzing Change

CCB.11 Create or leverage existing Mid-Atlantic government leadership groups to accelerate market transition

Work with partners in other leading jurisdictions to establish or collaborate with a Mid-Atlantic Deep Energy Leadership Group to help accelerate the transition toward net-zero buildings.

CROSS-CUTTING BUILDING ACTIONS

Leadership and Catalyzing Change

CCB.12 Build examples of breakthrough design in government and/or publicly-financed buildings

Require all significant new construction built or financed by the District Government to meet 2032 energy targets, and place net-zero energy requirements on any properties bid out to the private sector for redevelopment.

CCB.13 Use benchmarking data to create a catalog of best-in-class performers

Use available energy performance data to identify and highlight best-in-class energy performers, then use these buildings as case studies to set new standards for energy performance.

CCB.14 Create home and business of the future tours and energy events

Collaborate with local organizations to co-sponsor and organize in-depth tours and energy events at new and remodeled net-zero homes and small businesses.

CCB.15 Implement a high performance energy media, outreach, and communications strategy

Tell the story of the District's efforts to address climate change in the District Government's media and outreach strategy.

CCB.16 Provide a Sustainability Award for climate and energy solutions leadership

Expand the District's Sustainability Awards to include a dedicated annual award to the person or organization in the District who has done the most to reduce fossil fuel use.

CCB.17 Establish net-zero energy leadership cohorts

Establish building energy leadership groups of prominent and forward-thinking design, construction, and renewable energy industry members.

CCB.18 Create green jobs & workforce development platform

Create a clear and useful resource for green jobs training and workforce development opportunities and funding.

CLEAN & RENEWABLE ENERGY SUPPLY

Renewable Electricity Supply from outside the District

CRE.1 Design and manage the RPS to drive renewable energy generation and GHG reductions and set a 100% requirement for 2050

Initiate a collaborative dialogue and study to determine how best to design and manage the Renewable Portfolio Standard (RPS) to drive increasing investments in new renewable electricity generating capacity and maximize GHG reductions. Pass additional RPS legislation to require 100% renewable energy by 2050 at the latest.

CRE.2 Provide the Standard Offer Service through a long-term power purchase agreement

Investigate and pursue a mix of supply contracts including power purchase agreements with renewable electricity suppliers to supply electricity for the District's Standard Offer Service with at least 70% renewable energy.

CRE.3 Enact legislation that sets a maximum GHG intensity for electricity supplied to the District

Pass legislation requiring energy suppliers to avoid buying electricity that exceeds a certain GHG intensity threshold (i.e., GHG emissions per unit of energy). Design legislation to steadily increase requirements over time, shifting the District's non-renewable electricity supply to less GHG intensive generators.

CLEAN & RENEWABLE ENERGY SUPPLY

Renewable Electricity Supply within the District

CRE.4 Develop a centralized solar information and commerce platform

Create a centralized online platform to provide information on solar photovoltaic (PV) and thermal systems and facilitate their adoption, including resources on the purchase process and available incentives and financing.

CRE.5 Implement a targeted solar proliferation strategy

Partner with local organizations to develop and implement a targeted solar proliferation strategy to install solar PV and thermal systems on buildings across the District.

CRE.6 Adopt solar-ready and renewable energy generation building code requirements

Update building codes to require new buildings to accommodate a renewable energy generating system or connect to a community-scale energy system. As part of the move towards net-zero energy codes, require a percentage of building energy consumption to be met with on-site renewable energy generation.

Thermal Energy Supply & Microgrid Integration within the District

CRE.7 Undertake a built environment thermal decarbonization study

Conduct or commission a study to determine the best way to eliminate GHG emissions from thermal energy used in the District.

CRE.8 Develop a neighborhood-scale energy strategy

Develop a neighborhood-scale energy strategy with a focus on identifying potential supply and demand opportunities for thermal energy and electricity and preparing the District to create and capitalize on opportunities.

ELECTRICITY SYSTEM MODERNIZATION

Planning and Coordination

ESM.1 Define a vision of the future grid and characterize the stages of grid modernization

Create a vision of the District's future electricity system, and define the capabilities and characteristics the electricity grid will require to achieve this vision.

ESM.2 Adopt a framework for valuing distributed energy resource costs and benefits

Develop a way to consistently and transparently evaluate any new local energy generation resources, technologies, or other updates to the grid.

ESM.3 Support the collaborative development of an integrated distribution plan

Work with the Public Service Commission (PSC) and Pepco to develop an integrated distribution plan to support the modernization of the grid.

ESM.4 Intervene in Public Service Commission proceedings related to grid modernization

Intervene and participate in PSC proceedings related to grid modernization to ensure their coordination with other efforts that may affect or be affected by modernization efforts.

Analysis of the Electricity System Needs and Capabilities

ESM.5 Outline a path to overcome legislative and regulatory barriers to grid modernization

Investigate grid modernization actions in other leading regions to identify the path the District will take to overcome any barriers that might exist to grid modernization.

ESM.6 Conduct a hosting capacity study of the District's distribution grid

Conduct or commission a study to determine how much new local renewable energy generation can be accommodated on different parts of the grid without impacting the reliability of the power supply.

ELECTRICITY SYSTEM MODERNIZATION

Analysis of the Electricity System Needs and Capabilities

ESM.7 Develop a location-based profile of energy use and GHG emissions

Conduct an analysis of energy use and emissions in the District based on the location of the grid.

Immediate No Regrets Actions

ESM.8 Generate, evaluate, and prioritize a list of actions that the can be taken immediately

Identify the infrastructural, organizational, operational, financial, regulatory, and technological features necessary to realize the grid vision, and prioritize them for implementation.

ESM.9 Leverage existing advanced metering infrastructure data

Identify and pursue opportunities to use the data collected by advanced metering infrastructure installed across the District to get a better understanding of where and how energy is being used.

ESM.10 Identify near-term projects that should be coordinated with grid modernization activities

Align grid modernization efforts with any large-scale development projects and government regulatory procedures scheduled to occur within the next five years that may affect or be affected by grid modernization.

Proof of Concept Projects

ESM.11 Pursue pilot projects related to key modernization capabilities and technologies

Identify and prioritize key capabilities and technologies critical for grid modernization, and develop and implement related pilot projects.

ELECTRIC VEHICLE READINESS & ADOPTION

Electric Vehicle Readiness

EV.1 Adopt an electric vehicle-ready building code

Update building and construction codes to require buildings to install electric vehicle (EV) charging equipment and/or the ability to install future EV charging equipment.

EV.2 Adopt an electric vehicle-ready parking lot requirement

Update building codes to require new and renovated parking lots and garages to install electric vehicle chargers and/or the electrical infrastructure necessary to install electric vehicle charging infrastructure in the future.

Electric Vehicle Adoption

EV.3 Implement an electric vehicle bulk buy program

Partner with one or more automakers to offer an EV bulk buy program to District residents.

EV.4 Establish an electric vehicle Showcase and Purchase Center

Partner with automakers and local organizations to install an Electric Vehicle Showcase and Purchase Center in the District to provide information, provide test drives, and sell electric vehicles to residents.

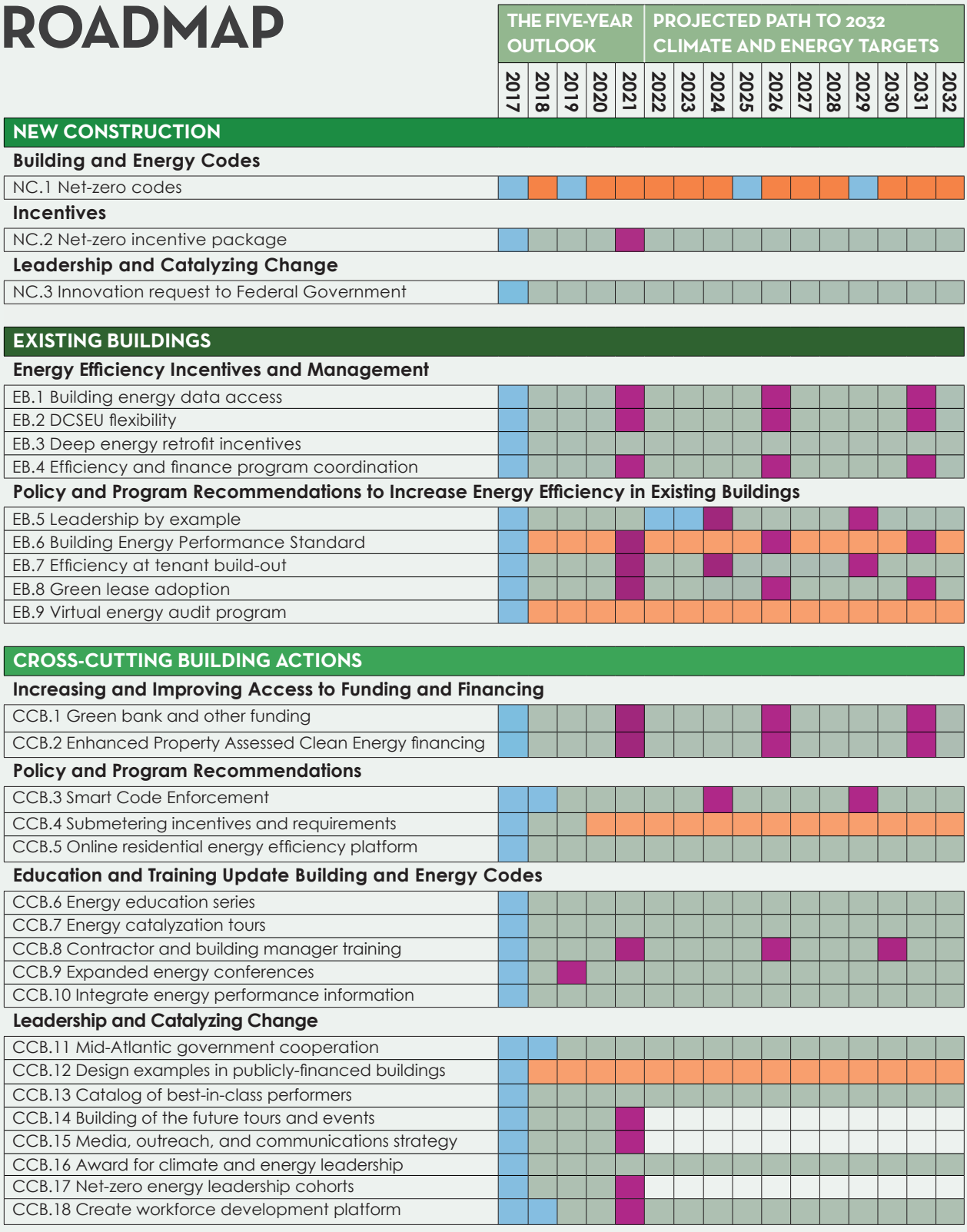
EV.5 Provide a vehicle purchase incentive

Adopt a financial incentive for the purchase of electric vehicles registered in the District.

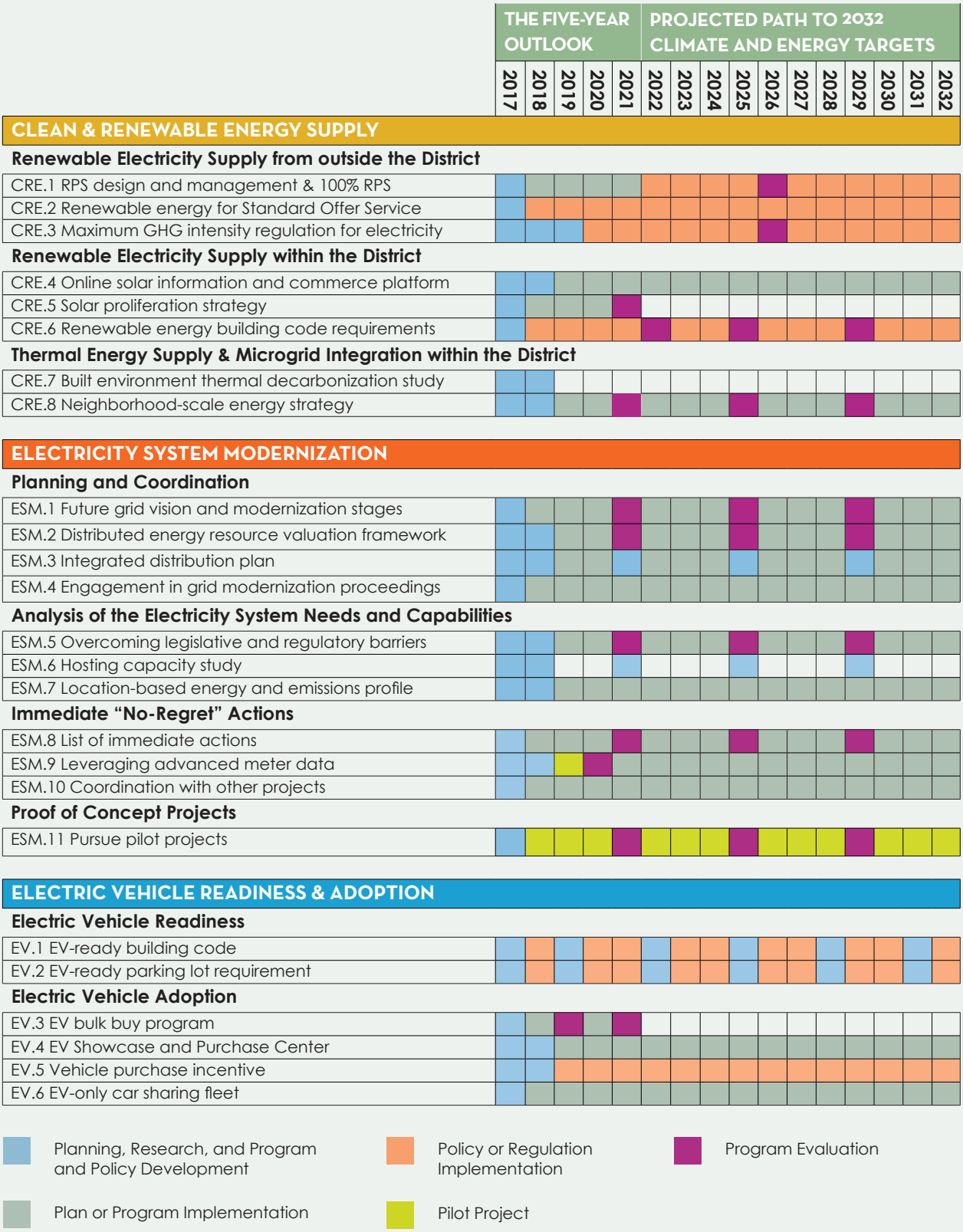
EV.6 Pursue an electric vehicle-only car sharing fleet

Contract one or more car share operators to supply an electric vehicle-only car share fleet in the District.

DRAFT ACTION ROADMAP



This draft roadmap is subject to revision pending public outreach and feedback.



WHAT'S NEXT FOR THIS LIVING DOCUMENT?

It is important to note that many of the actions identified in Clean Energy DC are only first steps. These actions have been identified by looking at what has worked in other cities and building upon existing efforts in the District, and they represent some of the best practices in climate change action across the world. However, more work still needs to be done to understand how different actions will affect the District's residents and businesses. For certain key actions, more detailed technical or financial studies will be necessary. This will ensure that the Plan is based on best information and practices, and incorporates the perspectives of any stakeholders or communities that may be affected in designing the path forward. This is the beginning of the discussion on the District's energy future, not the end.

Clean Energy DC is intended to serve as a "living document," rather than a fixed plan. This means that the path forward in terms of implementation should be designed together with the public and key stakeholders. The Plan should also be adaptive and changeable to reflect lessons-learned and better ideas. To make sure these goals are met, Clean Energy DC will be reviewed frequently with meaningful collaboration with key stakeholders and the public.

This is the beginning of the discussion on the District's energy future, not the end. Clean Energy DC is intended to serve as a "living document," rather than a fixed plan.

FUNDING THE TRANSFORMATION

Transforming the District's energy system from a system largely based on fossil fuels to one that is supplied predominantly by renewable energy is a big undertaking. To succeed, continued government investment will be needed to create a stable market for innovative energy solutions that use renewable energy and energy efficiency. It will also need the ongoing partnership of policymakers, stakeholders, and the public.

Clean Energy DC is based on the principle that innovation happens best in a stable market – one where funding is predictable and leadership is rewarded. To support this principle, the Plan requires a significant and stable pool of public funds to encourage private investment in renewable energy and energy efficiency. The Plan calls for an expansion of existing financing programs like the DCSEU and DC PACE. However, to truly achieve the transformation that is needed, new approaches are also needed. Two approaches have been recommended to accelerate the District's energy transformation and create a stable market for energy efficiency and renewable energy innovation: 1) the establishment of a green bank, and 2) the use of carbon pricing.

The idea behind the green bank is to create a pool of funding that can serve as an endowment for energy efficiency and renewable energy projects. Green banks are becoming more common across the world, and have been successfully used to invest in projects and technologies designed to accelerate energy market transformation. Green Banks are usually started by public entities, but the main focus is to attract private investment to create much larger pools of funding.

Carbon pricing is an additional funding mechanism that can help foster this transformation by encouraging consumers, businesses, and governments to choose low- and zero-emission energy options. By setting a price on carbon, jurisdictions like the District can send a strong price signal to the market to reduce GHG emissions. Carbon pricing can also provide the District with a long-term source of revenue to support the implementation of climate change actions.

A PLAN THAT EVOLVES

Clean Energy DC represents a first and important step toward the implementation and the eventual realization of a new energy future for the District. This journey will continue to be shaped by District stakeholders and the public, as actions from the Plan are continuously refined and modified. It will be gradually strengthened over time, and will put the District on the path to achieving its ambitious and important climate change and energy targets. Clean Energy DC will be implemented in a way that balances bold action and leadership with responsiveness to changes in the market and new technologies. It is intended to be a living document that will continuously incorporate new insights and information, based upon ongoing stakeholder collaboration and new research findings. The ultimate goal is to make the District of Columbia the best city in which to live and work.

Clean Energy DC is also intended to be closely coordinated with other District Government efforts. The actions proposed in its chapters are already aligned with several major District Government plans, including Sustainable DC (2013), moveDC (2014), and Climate Ready DC (2016). However, the District Government and other agencies are currently exploring other important topics such as clean energy financing, carbon pricing, neighborhood energy systems, microgrids, and reducing vehicle fleet emissions. At the time of developing Clean Energy DC, these research projects and initiatives were still underway. So, while the Plan reflects the District Government's latest research and thinking on these topics, new insights will be included into the areas noted above after the Plan is published. The Plan will also reflect the innovative work performed under the leadership of the District of Columbia Public Service Commission, the Office of People's Counsel, the District Department of Transportation, the Office of Planning, the Department of General Services, as well as the District's water and wastewater utility, DC Water.

STAY INFORMED

To find out more about Clean Energy DC, download the full plan, and stay up to date with any developments please visit: www.cleanenergydc.org.

DEPARTMENT OF ENERGY & ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

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