

# District of Columbia

Transportation Electrification Roadmap

## ORIENTATION

*Webinar will begin shortly...*



GOVERNMENT OF THE  
DISTRICT OF COLUMBIA  
MURIEL BOWSER, MAYOR

# District of Columbia

## Transportation Electrification Roadmap

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# ORIENTATION

Wednesday, 27 January 2021



GOVERNMENT OF THE  
DISTRICT OF COLUMBIA  
MURIEL BOWSER, MAYOR

# Welcome – Opening Remarks - Agenda

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## Agenda Outline

- Background: *DOEE's Transportation Electrification Roadmap*
- Introduction to the Grantee: *the Electrification Coalition*
- Transportation Electrification Roadmap
  - Goals
  - Activities/Tasks:
    - Overview
    - Work Completed
    - Work Remaining
- What Comes Next: *Monthly Stakeholder Engagement Workplan, 2021*
- Questions/Discussion

# CLEAN ENERGY DC

THE DISTRICT OF COLUMBIA CLIMATE AND ENERGY PLAN

## Transportation Electrification

★ ★ ★ DEPARTMENT  
OF ENERGY &  
ENVIRONMENT

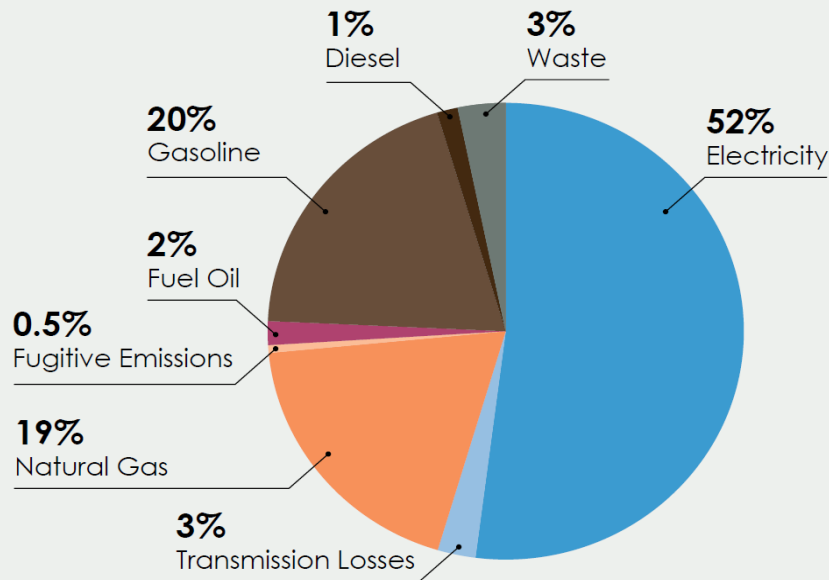
GOVERNMENT OF THE DISTRICT OF COLUMBIA



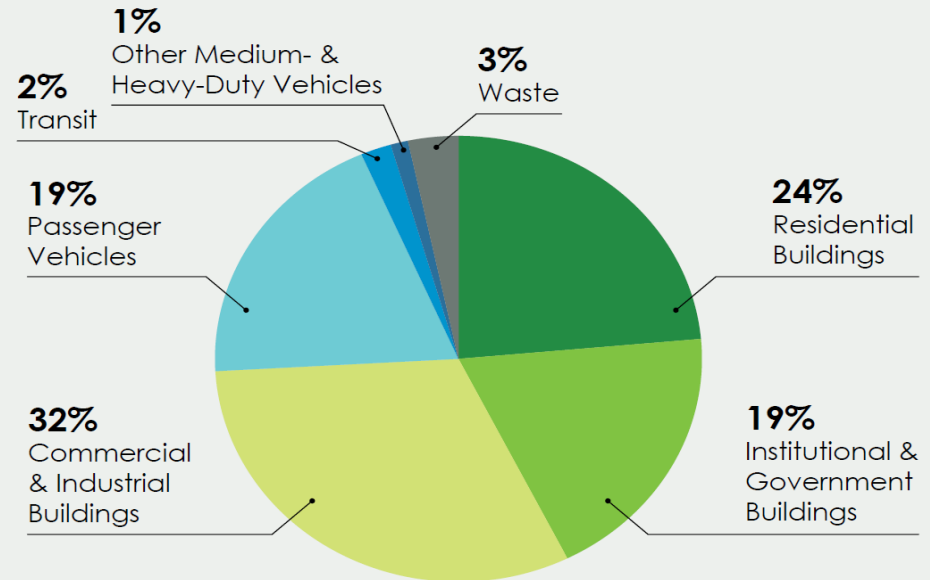
# DC CLIMATE AND ENERGY GOALS

Clean Energy DC is the District's first quantified roadmap to meet the Sustainable DC climate and energy goals.

## GHG EMISSIONS BY SOURCE



## GHG EMISSIONS BY SECTOR

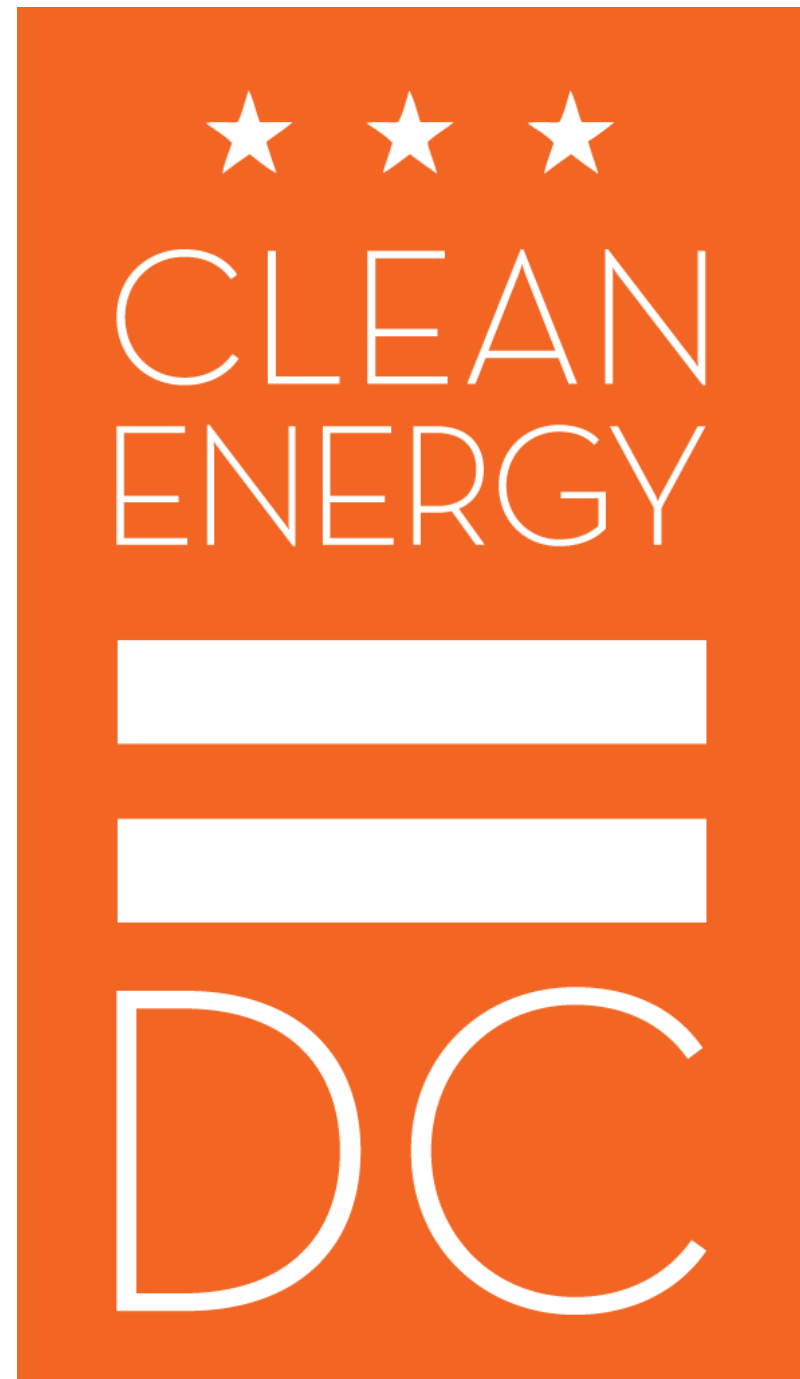


The plan will **reduce emissions by 50 %** by 2032 compared to 2006 levels, and will help the city achieve **carbon neutrality by 2050**

# Overview of CEDC Act

The Act, effective as of March 2019, will realize CEDC goals by targeting three areas:

- **Transportation Emissions Reduction and Electrification-** mandates and incentivizes a path for zero-emissions fleets, buses and private vehicles
- **Renewable Energy-** mandates 100% renewable energy by 2032
- **Energy Efficiency-** Establishes a first-of-its kind Building Energy Performance Standard for buildings



## TE Roadmap Goals

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- 1 Buses and private fleets 50% Low or ZEV by 2030 → 100% ZEV by 2045
- 2 100% EV replacement of public buses and school buses at EOL by 2021
- 3 At least 25% ZEV registrations by 2030 (estimates~75,000 EVs)

Provide policies, cost estimates, and timelines

## Roadmap – Status

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- Compared TE Roadmaps to determine best approach for DC
  - Looked at *Pittsburgh, San Francisco, Fort Collins, Boston (proposal), Austin, NY, Columbus*
- Awarded Grant to the Electrification Coalition
- Currently on track to present plan to the Mayor's office beginning of next fiscal year.
- Convening a stakeholder engagement group to provide feedback



# The Electrification Coalition



## Who We Are

The Electrification Coalition (EC) is a nonpartisan, non-profit organization committed to promoting policies and actions that facilitate the deployment of electric vehicles on a mass scale, in order to combat economic and national security dangers caused by our dependence on oil.



- Technical Lead: Climate Mayors EV Purchasing Collaborative
- Electrification Advisor: Bloomberg American Climate Cities Challenge
- Freight Electrification Pilot Project: Hewlett Foundation
- Lead Electrification Partner: Smart Columbus
- Electrification Advisor: City of Atlanta Partnership
- Project Lead: Drive Electric Northern Colorado
- Project Lead: Rochester EV Accelerator



# Transportation Electrification Roadmap: Goals

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- Inform and guide the District’s medium-term strategy for converting its public buses, high-capacity private passenger/light-duty vehicles, and commercial fleets to electric vehicles by 2045
- Identify and pursue short-term strategies for the District to achieve at least 25% zero-emission vehicle registrations by calendar year 2030
- By calendar year 2021, outline clear pathways to achieve 100% replacement of DC’s public buses, including school buses, with electric buses at the end of their useful life.

**“Through actions to increase electric vehicle adoption by public, private, and bus fleets, the District can avoid 3.5% of the GHG emissions projected for 2032, while laying groundwork for much larger GHG reductions by 2050.”**

*from RFA # 2020-2005-EA, Short Name: Transportation Electrification Roadmap  
Published 12/20/2019*

# Transportation Electrification Roadmap

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Report on work performed and results

→ Transportation Electrification Roadmap Final  
Report due **October 31, 2021**

# Transportation Electrification Roadmap

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Strategy development for increasing private sector investment in EVs and related infrastructure

- Determine the infrastructure needed to service the goal of 25% EVs registered in the District by 2030
- Develop a How-To Guide and an EV Charging Plan of Action
- Examine Pepco rate cases

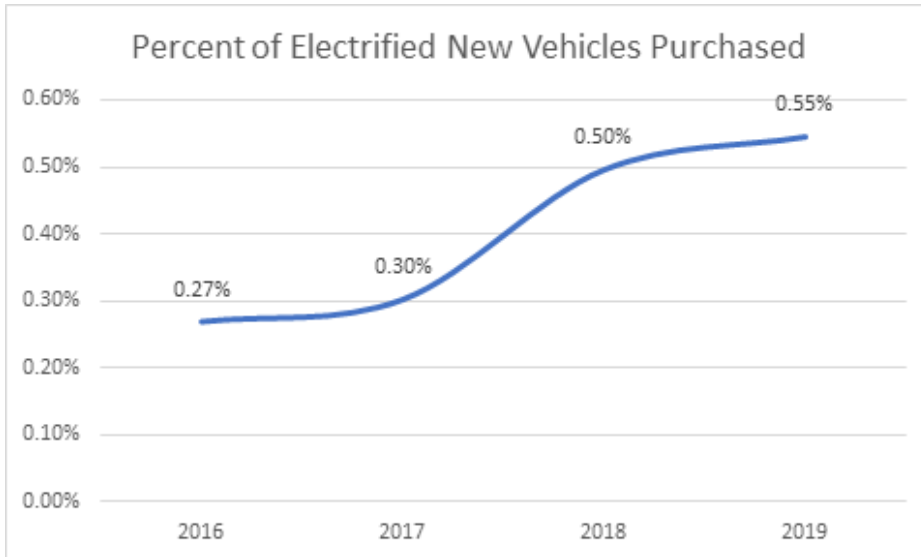
Determine infrastructure needs and equitable placement within the District

- Conduct a spatial geographic analysis of EV charging needs

# Work completed to date (January 2021):

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## BASELINE ASSESSMENT - ELECTRIC VEHICLE (EV) ADOPTION



Projected EV adoption by 2030  
(new vehicle sales):

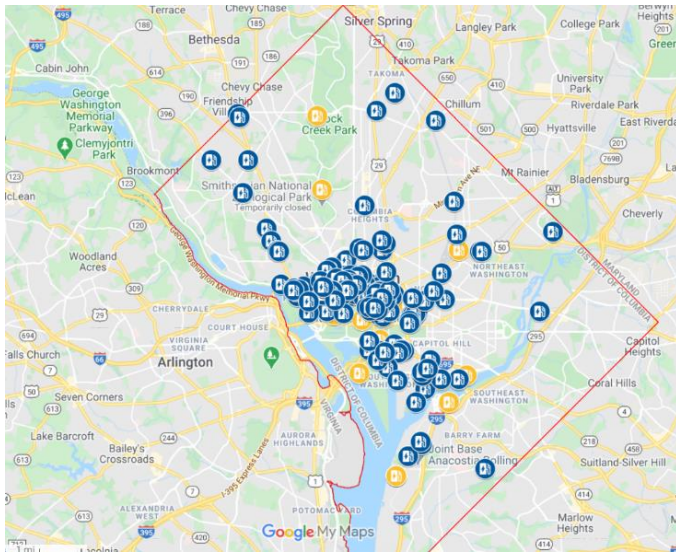
**LOW - 5%**

**HIGH - 11%**

**DISTRICT'S GOAL: 25% OF TOTAL VEHICLE REGISTRATIONS**

# Work completed to date (January 2021):

## BASELINE ASSESSMENT - EV CHARGING



EV Charger Type	Number of Charge Ports
Workplace – Level 2 (L2)	2,677
Public – Level 2 (L2)	1,858
Public – DC Fast Charging (DCFC)	542

### CURRENT PUBLIC EV CHARGING:

LEVEL 2 - 546 OUTLETS

LEVEL 3 - 33 OUTLETS

### PROJECTED EV CHARGING NEED BY 2030

(GOAL OF 25% EVS REGISTERED)

# *Work remaining:*

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## GEOGRAPHICAL EV CHARGING SITING - ANALYTICAL METHODOLOGY

### STRATEGIC PLAN TO EXPAND EV CHARGING:

- IDENTIFY LOCATIONS THAT WILL SERVE THE HIGHEST UTILIZATION
- CENTER THE NEED FOR EQUITABLE PLACEMENT WITHIN THE DISTRICT

### FACTORS TO BE WEIGHED IN THE ANALYSIS:

- TRAFFIC FLOW
- NEARBY POINTS OF INTEREST (PRIME CHARGING LOCATIONS)
- SITE OWNERSHIP
- MEETING HIGH NEED
- ACCESSIBLE EV CHARGING IN ALL WARDS

THE ASSESSMENT WILL ALSO EXPLORE CURBSIDE CHARGING AND REDUCING BARRIERS DURING THE PERMITTING PROCESS.

# Transportation Electrification Roadmap

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Identify best practices for effective education and outreach

Development of materials and recommendations for stakeholder engagement

- Create a DC EV Consumer Adoption campaign and guidance
- Adapt and customize material, following the District branding and language guidelines
- Create an accessible location for the public and private stakeholders to utilize the materials developed



# Work completed to date (January 2021):

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## EDUCATION AND OUTREACH

### **Tailored EV Consumer Adoption Campaigns:**

- *Bus fleet electrification*
- *Prioritizing diversity, equity, and inclusion*
- *Car sharing*
- *Workplace charging*
- *Dealership engagement*
- *Tailored, Accessible Communications and outreach*
- *'Ride and Drive' experience events*

# Transportation Electrification Roadmap

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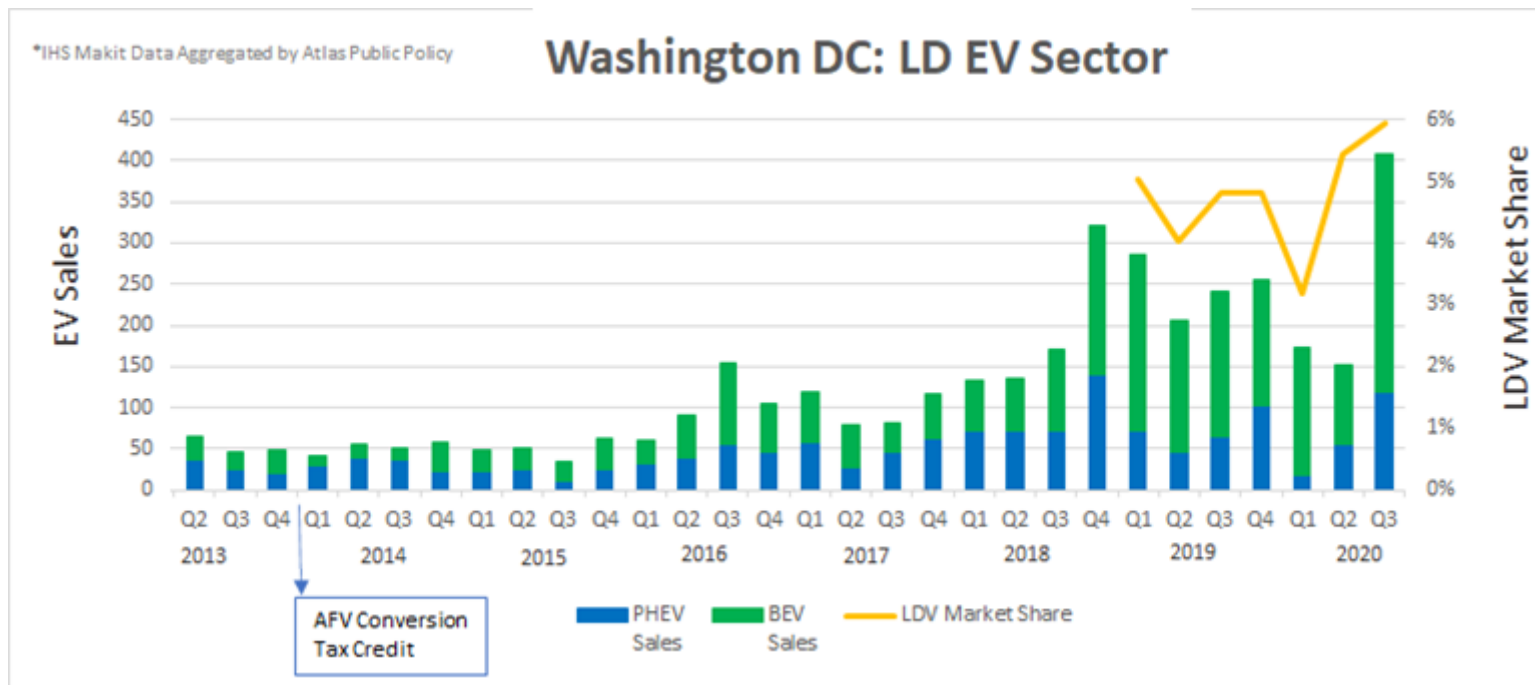
## Policy analysis for Transportation Electrification

- Identify and compare efficacy of incentives for individual vehicles versus forms of mass transit
- Analyze data to determine which incentives will have the biggest impact

# Work completed to date (January 2021):

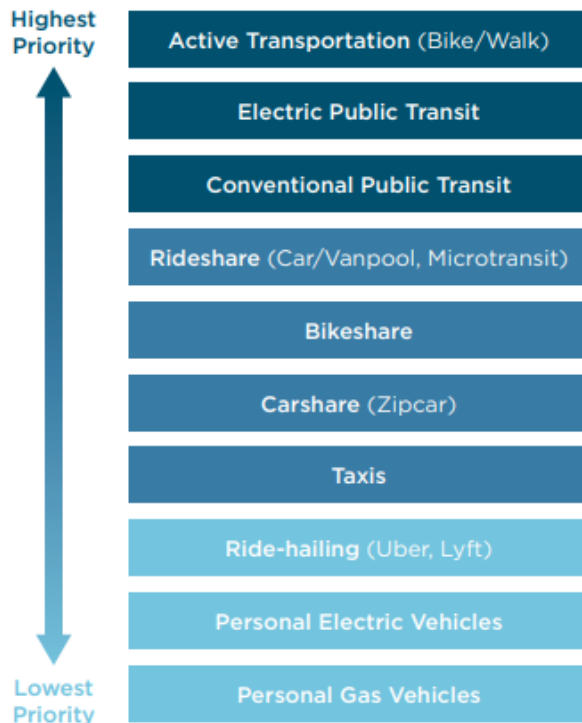
## ELECTRIC VEHICLES AND CHARGING INFRASTRUCTURE - POLICY AND INCENTIVES

### Sample EV Policy Incentive Timeline



# Work remaining:

## EV POLICY AND INCENTIVES - POLICY RECOMMENDATIONS AND IMPACT



Greenlining’s Urban Transportation Equity & Emissions Prioritization Strategy

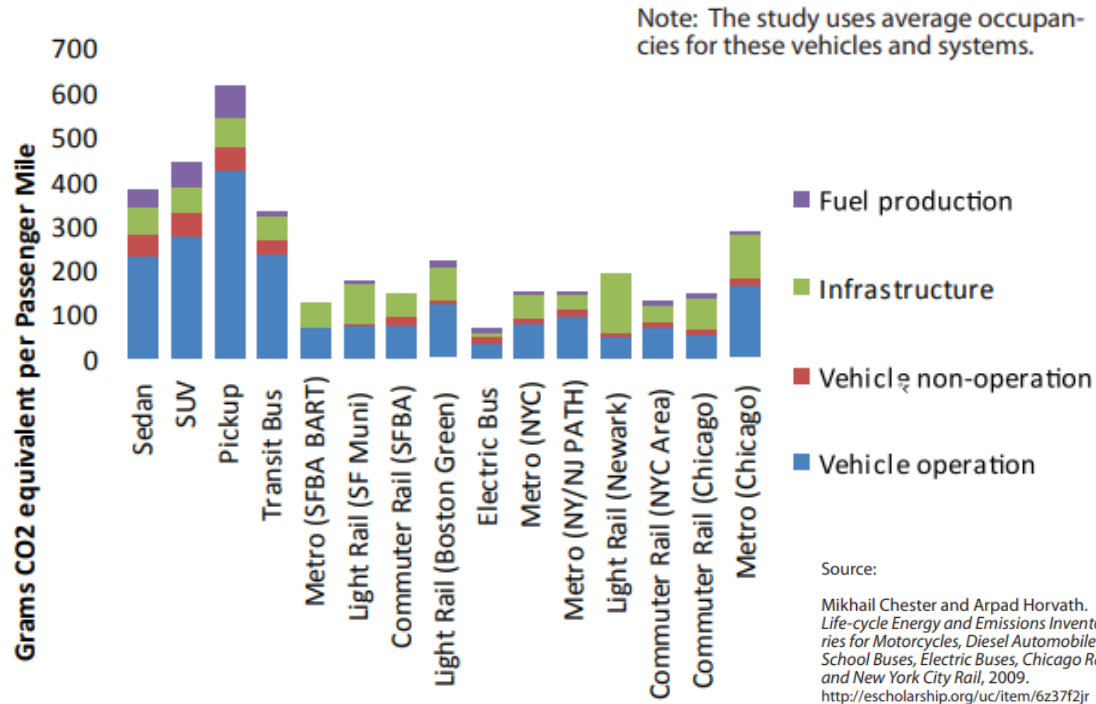
Policy Options: Transportation Equity & Emission Reduction			
Policy	Emission Impact	Equity Impact	Financial Cost
<b>Public Transportation</b>			
Complete Streets Initiatives			
Free Monthly SmarTrip card credits (\$100 Proposed)			
Subsidized bike sharing			
Electric Bus/Shuttle Requirements for public fleets			
Low-income EV Car Sharing			
All-income EV Car Sharing			
Electric Bike purchase incentives (Low-income focused)			

Sample Scorecard: Transportation Policy Gap Analysis

# Work completed to date (January 2021):

## DISTRICT OF COLUMBIA TRANSPORTATION ANALYSIS

### U.S Life Cycle Greenhouse Gas Emissions, Average



# Work completed to date (January 2021):

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## DISTRICT OF COLUMBIA TRANSPORTATION ANALYSIS

### District of Columbia Public Transit Emissions & Efficiency (2008)

Transportation Service	Pounds CO <sub>2</sub> / Passenger Mile	Average % of Seats Full (Ridership)	kWh/Seat Mile (CO <sub>2</sub> Efficiency of Vehicle)
Washington Metro (Train)	0.347	33%	0.101
Washington Metropolitan Area Transit Authority (Bus)	0.718	28%	0.199

### Annual Cost Comparison Between Transportation Options

	Annual Vehicle Miles Travelled (VMT)	Miles per Gallon (2018 LDV Avg)	Cost per Gallon	Kilowatt-hour (kWh) per mile	Cost per kWh	Upkeep cost per mile	Annual Total
ICE	5,341	25.1	\$2.39	N/A	N/A	\$0.079	<b>\$930.50</b>
BEV	5,341	N/A	N/A	0.270	\$0.13	\$0.024	<b>\$316.66</b>
E-Bike	5,341	N/A	N/A	0.020	\$0.13	\$0.046	<b>\$258.58</b>

# Work remaining:

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## DISTRICT OF COLUMBIA TRANSPORTATION ANALYSIS



***Prioritize transportation policies that follow the Greenlining Institute's equitable transportation framework.***

- Further analysis of the District's transportation patterns, down to the zip code community level.
- Determine a point of diminishing returns for mode-shift or transportation electrification, where additional investments in zero or low emission travel options (walking/biking, public transportation, electric bikes) shows minimal impact in achieving higher use:
  - Survey District residents
  - External research from other cities

# Transportation Electrification Roadmap

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Suggest incentives for transportation electrification adoption

- Work with the District to develop plans to support EV rates for all electric vehicles.
- Project costs and savings associated with EVs and charging stations
- Work with Energy Administrator's team to determine the next best steps for supporting transportation electrification.



# Work completed to date (January 2021):

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## EV CHARGING POLICIES AND INCENTIVES

- EV charging infrastructure is a key component of supporting growth of the EV market in the District
- Access and Equity:
  - Charging opportunities for those that live in dense urban areas, in multi-unit dwellings (MUDs), and with no dedicated parking spot to charge.
  - Ensure access to charging infrastructure in historically disadvantaged communities.

# Work completed to date (January 2021):

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## EV CHARGING POLICIES AND INCENTIVES

### *Pepco's Proposed Transportation Electrification Program*

- Original 2018 proposal included 13 Offerings, many were denied by the District of Columbia Public Service Commission (DCPSC). Approved offerings provide the opportunity to advance EV adoption and create targeted and equitable outcomes

	Description	Notes
Offering 1	Residential Whole House TOU	Pepco directed to file an updated tariff to facilitate deployment of EV charging stations.
Offering 7	Public Neighborhood Smart Level 2 EVSE	Approved for up to 55 public charging stations (35 Smart L2 and 20 DCFC) and to provide “make ready” infrastructure. Pepco directed to detail distribution rates for these chargers.
Offering 8	DC Fast Chargers	
Offering 10	Electric Taxi / Rideshare Infrastructure	Directs Pepco to update tariffs to ensure that EV charging station owners/operators can offer services under these tariffs, up to 10 Smart L2 and DCFC.
Offering 11	Electric Bus Infrastructure	Approved for deployment of “make ready” infrastructure for public busing, and develop necessary tariffs for owners/operators, up to 5 depot and 1 on-route chargers.

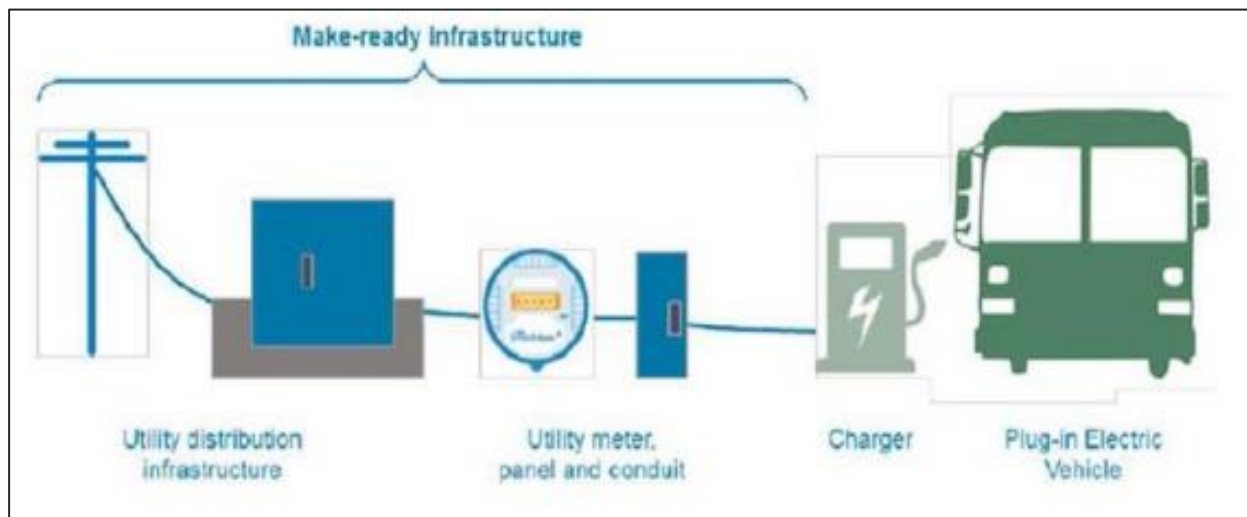
# Work remaining:

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## EV CHARGING POLICIES AND INCENTIVES

### *Pepco's Proposed Transportation Electrification Program*

- The PSC did approve Pepco to provide “make ready” infrastructure to support the EV charging stations, which includes improvements to utility-side infrastructure up to the conduit and meter.



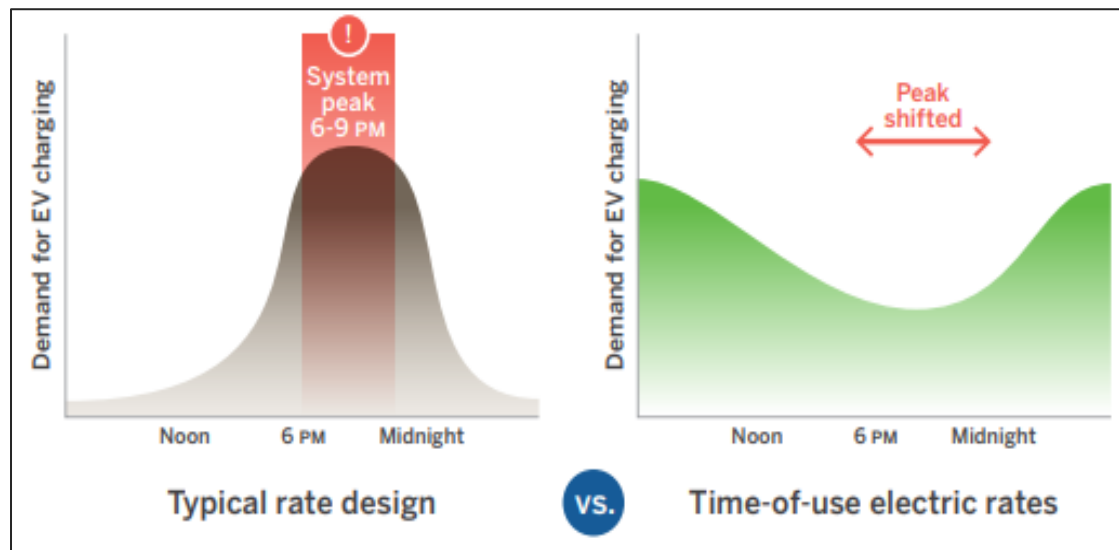
Up to 35 Smart Level 2 charging stations and 20 Fast-Charging stations  
Up to 5 depot and 1 on-route chargers

# Work remaining:

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## EV CHARGING POLICIES AND INCENTIVES

- Electricity Rates (Tariffs)
  - Best practices for addressing **Demand Charges** continue to be collected and analyzed from utility and Public Service Commission programs across the country.
  - **Demand Load analysis** of the District's 24-hour load profile, in conjunction with PSC, Pepco, and other stakeholders.
  - **Time-Of-Use electricity rates**, to incentivize consumers to shift their charging behavior to times when grid capacity is stressed.



# Transportation Electrification Roadmap

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## District School Bus Electrification

- Coordinate with the Office of the State Superintendent of Education (OSSE) on desired outcomes for a potential electrification program.
- Highlights the public benefits of electric buses in public messaging

# Work remaining:

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## BUS FLEET ANALYSIS

The **Office of the State Superintendent of Education (OSSE)** needs to assess and plan the transition of the District's school bus fleet to Battery Electric Buses (BEBs).

Partnering with the **Washington Metropolitan Area Transit Authority (WMATA)** to transition the fleet of transit buses to BEBs

### *Primary Data Needs:*

- Operational fleet data (year and make of current vehicles, current annual or daily mileage)
- Unit replacement schedule (average age of replacement / mileage / other factors)
- Annual replacement budget or replacement backlog
- Route prioritization

# Work remaining:

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## BUS FLEET ANALYSIS

### ***Other Considerations for successful electrification:***

- Ownership case of the buses and depot locations(s), existing facility electricity supply, and planned facility renovations to inform bus maintenance and EV charging infrastructure deployment.

### ***Recommendations include:***

- Prioritize initial BEB deployment on routes that serve underserved populations, and/or those communities that are overburdened by transportation-related pollution
- Take advantage of innovative financing and ownership models, such as lease financing for batteries or entire units, if applicable
- Utility partnerships for 'second life' battery opportunities

# Transportation Electrification Roadmap

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Develop an equity stakeholder engagement and feedback group

→ Develop an equity engagement and feedback group

This orientation is the first webinar convening of the equity engagement and feedback group, dubbed the ***Stakeholder Equity Feedback Group***.



# Work completed to date (January 2021):

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## EQUITABLE CONSIDERATIONS FOR EV PROGRAMS

*DOEE is committed to ensuring equitable outcomes for all residents with this Roadmap. The aim is to engage key stakeholders facing barriers to accessing the benefits of vehicle electrification initiatives and empower these voices by letting their experiences and needs influence the design of the Roadmap's recommendations.*

### **Stakeholder Equity Feedback Group, includes:**

- Environmental/transportation/consumer advocates
- Residents/Community Organizations
- Faith groups, Public-service non-profits, and community development organizations
- Energy/Utility stakeholders
- Labor/Workers' representatives, etc

# *Work remaining:*

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## EQUITABLE CONSIDERATIONS FOR EV PROGRAMS

### **Transportation Needs Assessment (TNA)**

Listening to the needs of the community and obtaining their organic and informed recommendations. A robust TNA will be tailored to underserved populations, with the goal of identifying existing concerns; gaps in mobility, awareness/knowledge, and services; and, through stakeholder brainstorming activities, identifying electrified transportation projects which may address these stakeholder concerns.

### **Continuous Feedback Loop**

Regular solicitations of feedback will be made as the Roadmap recommendations are developed. Organizations and/or individuals will also be identified to continue leading engagement with assembled stakeholders, in an effort to guide longer-term accountability with respect to equity.

# Stakeholder meetings:

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## WHAT COMES NEXT - MONTHLY 2021 WORKPLAN (TENTATIVE)

Month	Stakeholders Targeted/Workgroup	Objective/Task
January	[All]	<b><i>Introduction and Orientation to the DC Transportation Electrification Roadmap</i></b>  Outline the goals and activities of the Transportation Electrification Roadmap; Review the activities and objectives of the Stakeholder Equity Feedback Group; Stakeholder survey to determine interest for further workgroup participation.
February	[All]	<b><i>Introduction and Orientation, Pt II</i></b>  Follow-up to initial webinar, providing opportunity for additional questions, comments, and initial impressions from all stakeholders. Review interest survey for stakeholder workgroups.

# Stakeholder meetings:

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## WHAT COMES NEXT - MONTHLY 2021 WORKPLAN (TENTATIVE)

Month	Stakeholders Targeted/Workgroup	Objective/Task
March	ANCs/residents, Community development organizations, Environment/Transportation Advocates, Faith Groups	<b><i>Transportation Electrification Outreach and Education; Introduction to the Transportation Needs Assessment (TNA)</i></b>  General information and resources on EVs and EV adoption strategies will be presented, and feedback solicited from stakeholders on the campaign resources that have been developed. The TNA activity will be introduced, and the objectives and strategies related to it will be discussed – particularly their appropriateness and impressions of their efficacy.

# Stakeholder meetings:

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## WHAT COMES NEXT - MONTHLY 2021 WORKPLAN (TENTATIVE)

Month	Stakeholders Targeted/Workgroup	Objective/Task
April	ANCs/residents, Energy/Utility groups, Community development organizations, Business development groups (private site hosts), Environment/Transportation Advocates, Faith Groups	<b><i>Equitable EVSE Placement</i></b> Review analysis regarding EVSE development in the District. It will cover current availability/investment, early recommendations for the increased investment needed to meet the District's defined goals for EV adoption, and a discussion comparing strategies used to encourage similar levels of infrastructure development in other areas. This webinar will also present the topic of equitable EVSE placement in the District.

# Stakeholder meetings:

## WHAT COMES NEXT - MONTHLY 2021 WORKPLAN (TENTATIVE)

Month	Stakeholders Targeted/Workgroup	Objective/Task
May	<ol style="list-style-type: none"> <li>1. Energy/Utility groups, Community development organizations, Business development groups (private site hosts)</li> <li>2. ANCs/residents, Community development organizations, Environment/Transportation Advocates</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Incentives:</b> Possible convening of utility and fleet interests on the policy recommendations resulting from analysis to support EV rates for LDV and buses.</li> <li>2. <b>Incentives / Transportation Needs Assessment:</b> Convening of the stakeholders targeted for the TNA. Potential EV/SE incentives will be reviewed (specifically relating to this group, such as rideshare credits or used EVs) and also provide sample information on the benefits of doing TNAs, as well as answer questions, begin discussion of the issues, and outline the solicitation process. This video conference will be followed-up by written exercises to generate feedback, to be collected next month.</li> </ol>

# Stakeholder meetings:

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## WHAT COMES NEXT - MONTHLY 2021 WORKPLAN (TENTATIVE)

Month	Stakeholders Targeted/Workgroup	Objective/Task
June	Energy/Utility groups, Community development organizations, Business development groups (private site hosts),	<b>Private Sector EV/EVSE Strategy:</b> Convene corporate/business interests and the utility to present an analysis on how to meet the 25% EV registration in District by 2030.
July	Energy/Utility groups, ANCs/residents, Community development organizations, Environment/Transportation Advocates, Faith Groups, Transportation Workers/Labor Unions (Drivers/Mechanics)	<b>School Bus Electrification:</b> Provide an update on our work to transition District school fleets. This webinar can also introduce objectives for wider EV-ecosystem inclusion, like training opportunities in EV servicing and maintenance.

# QUESTIONS

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Questions?

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