



ZERO EMISSION TRANSIT BUS PANEL

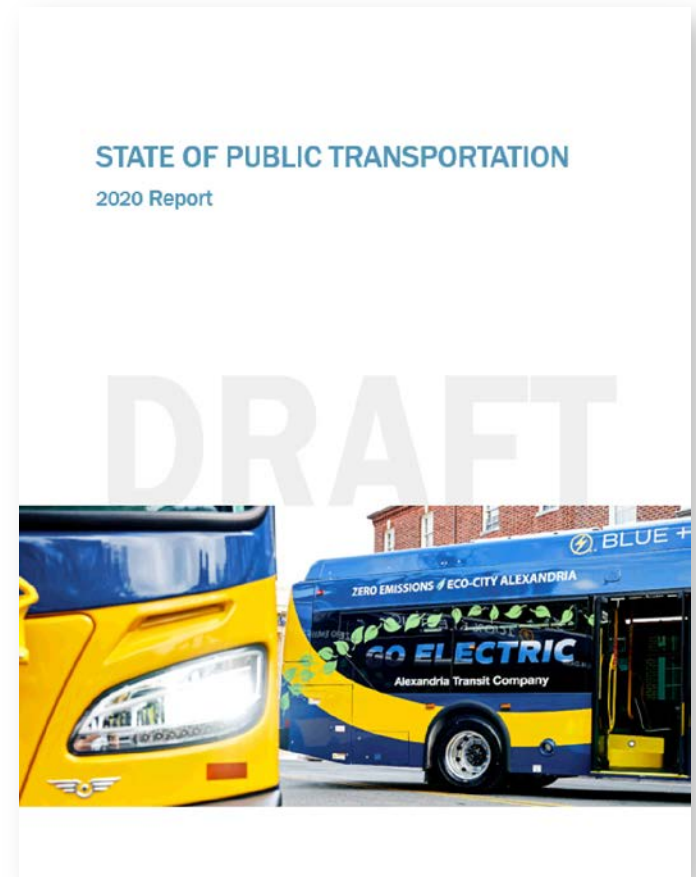
Antonio (Tony) Castañeda
TPB Transportation Planner

COG Climate Energy and Environment Policy Committee
September 22, 2021



2020 State of Public Transportation Report

- Overview of bus electrification activities throughout the region as listed in the 2020 SOPTR
- Increase in E-Bus procurement, studies and pilots in 2020
- The purpose of the report is to provide a snapshot of public transportation activities in the NCR
- Updated activities and procurement plans across the region into 2025



Sections of the report

Part I: COVID-19's Impact on Public Transportation

- Overview of health, safety impacts and responses from service providers and ridership levels through end of 2020

Part II: Fixed Route Transit Services

- Profile sheets provide overview of ridership, operational expenses, revenue sources, recent accomplishments and system characteristics

Part III: Other Public Transit Services

- Overview of additional transit services such as paratransit and commuter services and their recent accomplishments

Part IV: Regional Public Transportation Organizations

- Information on organizations that operate, provide research or project development for public transportation

Part V: Public Transportation Accomplishments

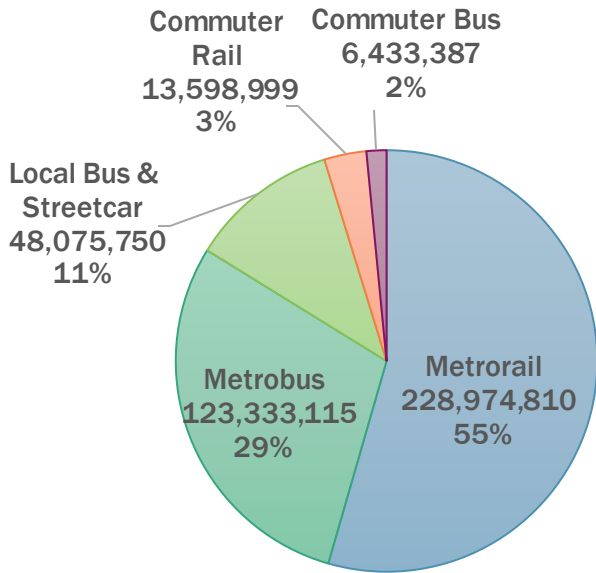
- Major studies planned, in progress or completed and significant operational achievements occurring during CY 2020 by service provider

Part VI: Transportation Planning Board

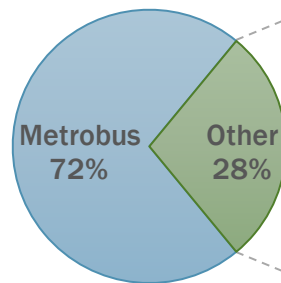
- Overview of how the TPB assists with regional public transportation including RPTS, PBPP and Visualize 2045



2019 NTD Data NCR Overview



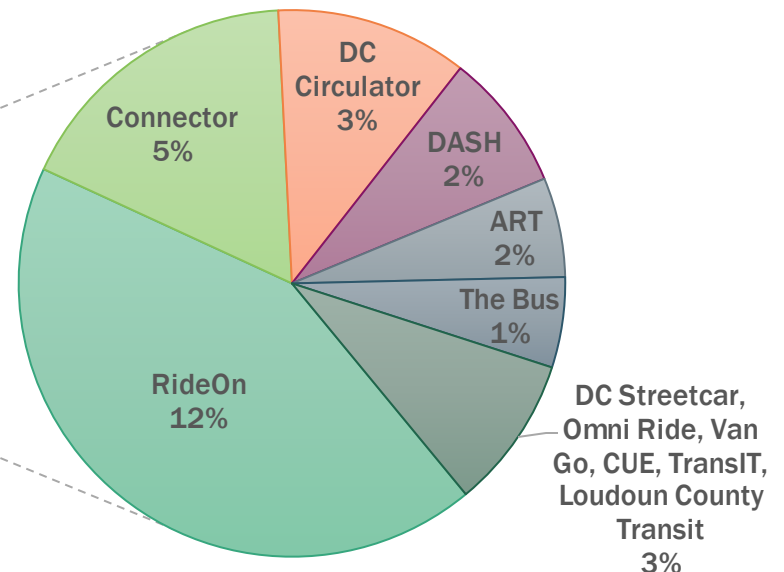
- 28% of bus trips occurred on local bus



- Over **420 MILLION UNLINKED PASSENGER TRIPS** in 2019*

*MARC and MTA Commuter Bus imputed for NCR

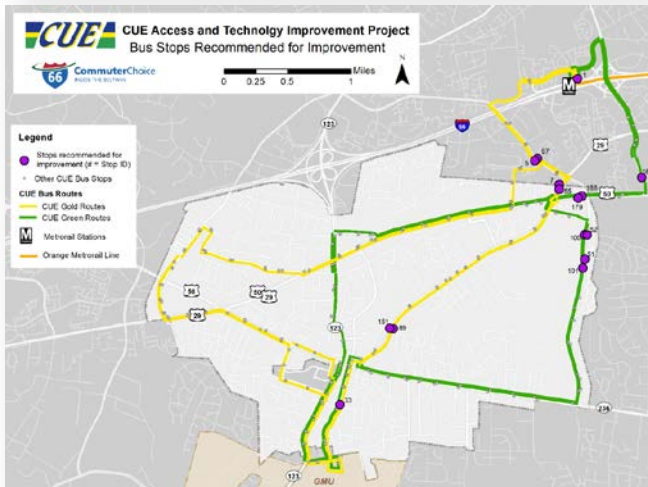
- **OVER 40% of all transit trips** in the region occurred by **BUS**



Highlights: Part II – Agency Profile Sheets

Touch less. Do more.

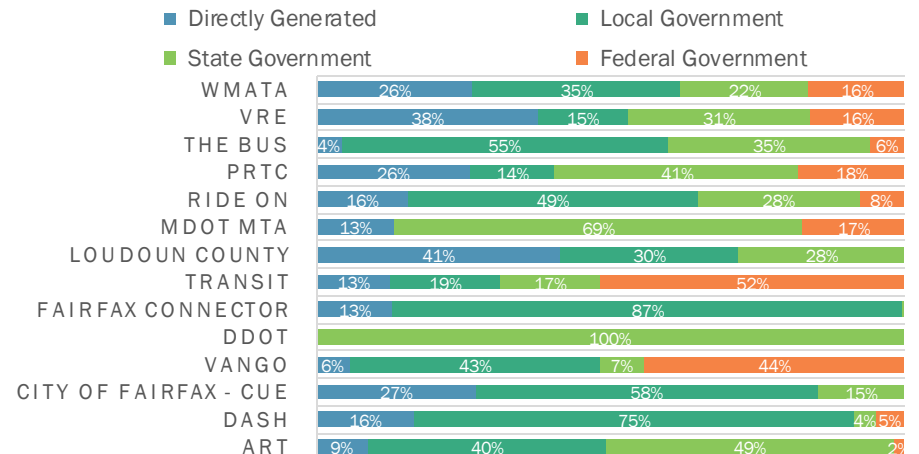
Everything you need to ride, right on your phone. Available for iOS and Android.



HIGHLIGHTS

- App / App integration improvements
- New Routes & Service Changes
- Battery Electric Buses (BEBs)

NCR TRANSIT SERVICE PROVIDERS' FY19 REVENUE SOURCES



Highlights of Part V – Major Accomplishments

BL OR SV STUDY PROCESS & TIMELINE

Stakeholders and the public will be actively engaged in helping to identify and evaluate potential alternatives, as well as in selecting a Locally Preferred Alternative. The process will be guided by input from both internal and external advisory committees.

2019

- SPRING: PURPOSE & NEED
- SUMMER: ALTERNATIVES DEVELOPMENT
- FALL: ALTERNATIVES EVALUATION

2020

- WINTER: COST / BENEFIT ANALYSIS
- SPRING / SUMMER: SELECTION OF PREFERRED ALTERNATIVE
- FALL: (Timeline ends)

STUDY AREA

WHAT IS AN ALTERNATIVES ANALYSIS?

An Alternatives Analysis is a process for evaluating the costs, benefits, and impacts of transportation improvements along a transit corridor. This process accomplishes the following:

- A thorough evaluation of Metro's needs and opportunities;
- A range of options for addressing those needs;
- A high level of stakeholder and public engagement;
- The selection of a locally-preferred alternative (LPA); and
- The necessary documentation to apply for federal transportation funds.

FOR MORE INFORMATION

E-mail the Office of Planning at BOStudy@wmata.com with general questions about the study.

Visit our project webpage at wmata.com/BOStudy for ongoing updates, feedback opportunities, and to sign up to receive updates on the project.

ALEXANDRIA TRANSIT COMPANY

DASH

Zero Emission Bus Feasibility Study

Submitted by:
Center for Transportation and the Environment

Issued: December 6, 2019

HIGHLIGHTS OF STUDIES

- Blue/Orange/Silver Line Corridor Reliability and Capacity Study
- DDOT Bus Priority Toolbox
- DASH
 - Zero Emission Feasibility Review
 - Zero Emission Implementation Plan

Bus Priority Program Toolbox

MARCH 2021

DC GOVERNMENT OF THE DISTRICT OF COLUMBIA
DC MURIEL BOWSER, MAYOR

Regional Battery Electric Buses in the news

To Meet Zero Emissions Goal, DASH Debuts New Electric Buses

By **Kevin Dauray** - July 30, 2021

Montgomery County Rolls Out First Four Electric Buses on Ride On; Accelerates Efforts to Reduce Transportation Emissions

For Immediate Release: Thursday, September 3, 2020

LOCAL NEWS

After a \$2.2 million government grant, electric buses will soon come to PG County

Rina Torchinsky · September 20, 2019

Maryland County Shows Off Electric Bus Fleet to Congress

Frederick County, Md., local government officials had the opportunity to show off their electric bus fleet and solar array at the county landfill to Congressmen from both coasts late last week.

BY STEVE BOHNEL, THE FREDERICK NEWS-POST / MARCH 3, 2020

14 electric vehicles will join D.C. Circulator fleet on May 1

D.C. is getting greener

By **Michelle Goldchain** | @goldchainam | Apr 20, 2018, 9:45am EDT

NEWS

Fairfax County to begin transition to electric vehicles after landing \$4.4M in state funds

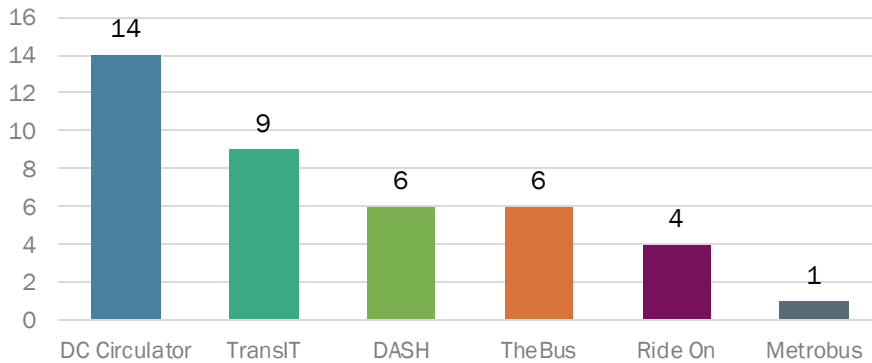
Angela Woolsey May 12, 2021 at 9:30am

Sources (L>R): The Zebra, Montgomery County MD – press detail, DBK News, Govtech, DC Curbed, Reston Now

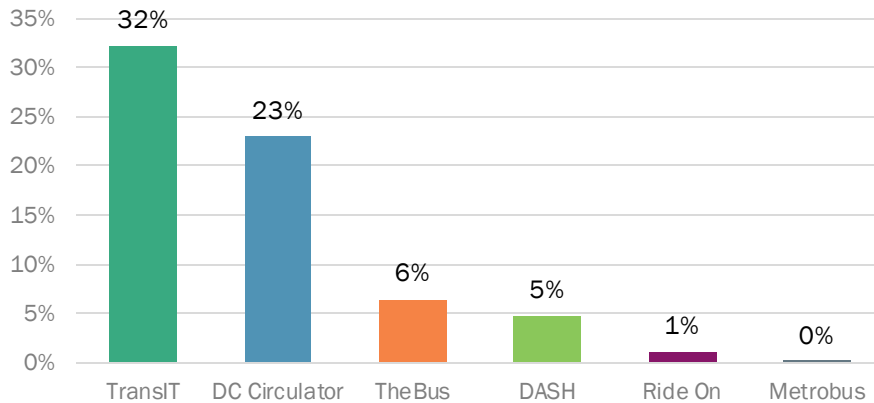


BEB Fleets in the NCR

2021 Total Count of E Buses by Agency
(Total: 40)

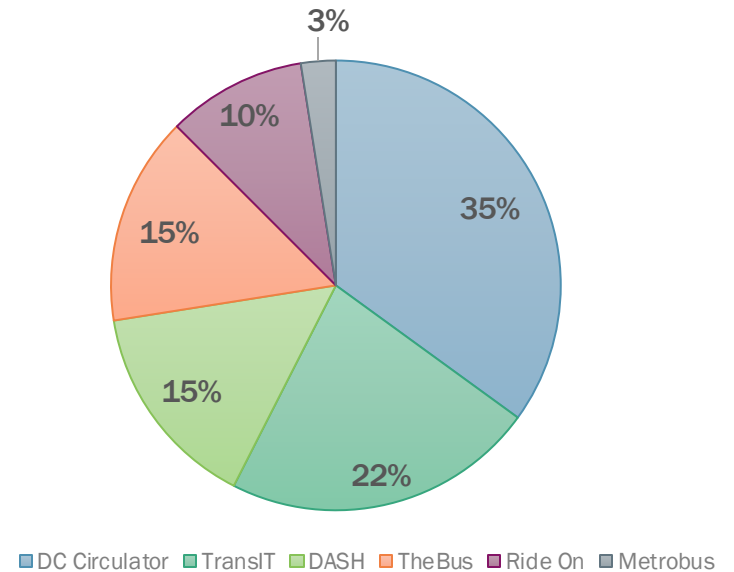


E Buses as % of Agency's Total Fleet (2021)



Source: Mixed: NTD RVI & review of local reports / articles

2021 Regional E Bus fleet (by agency)



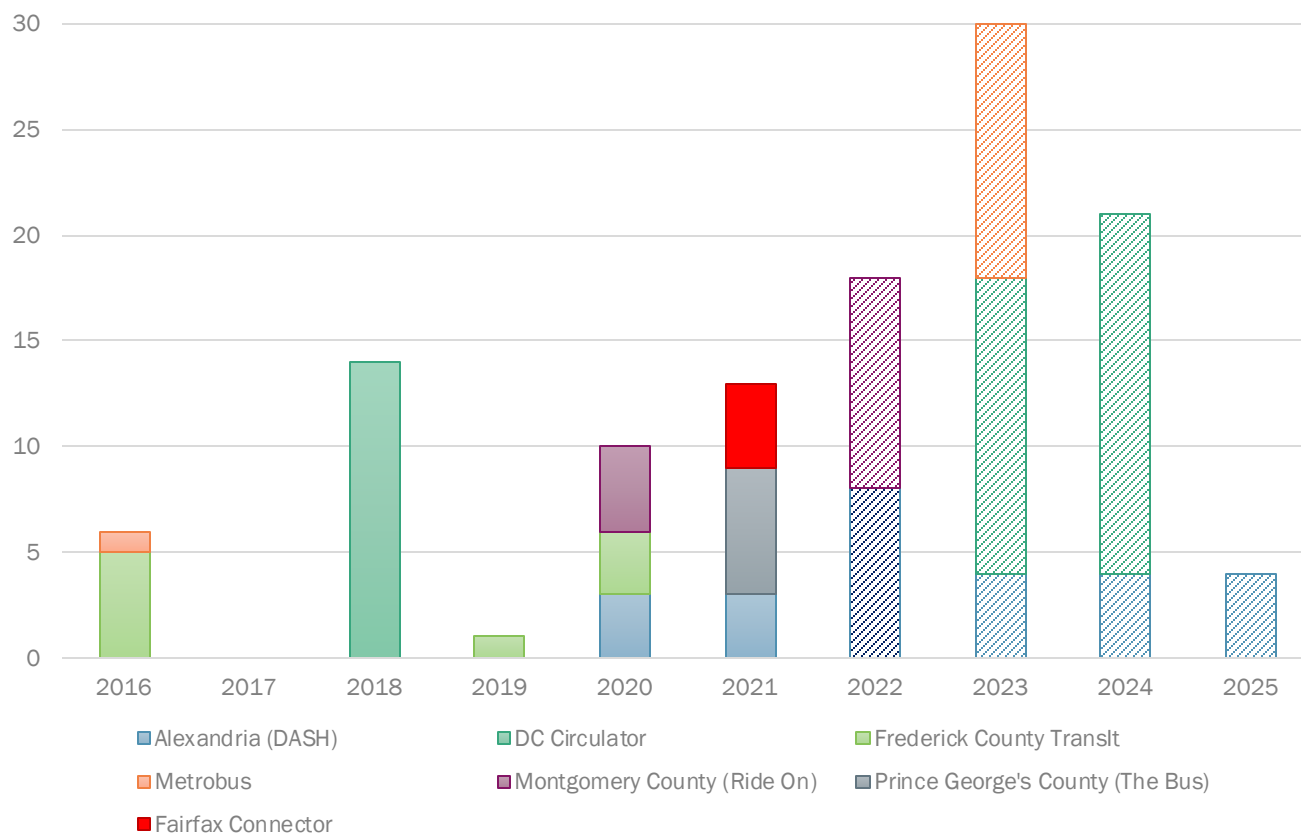
NCR Total Local Bus Fleet (2019)

2,714 buses



BEB Procurement in the NCR

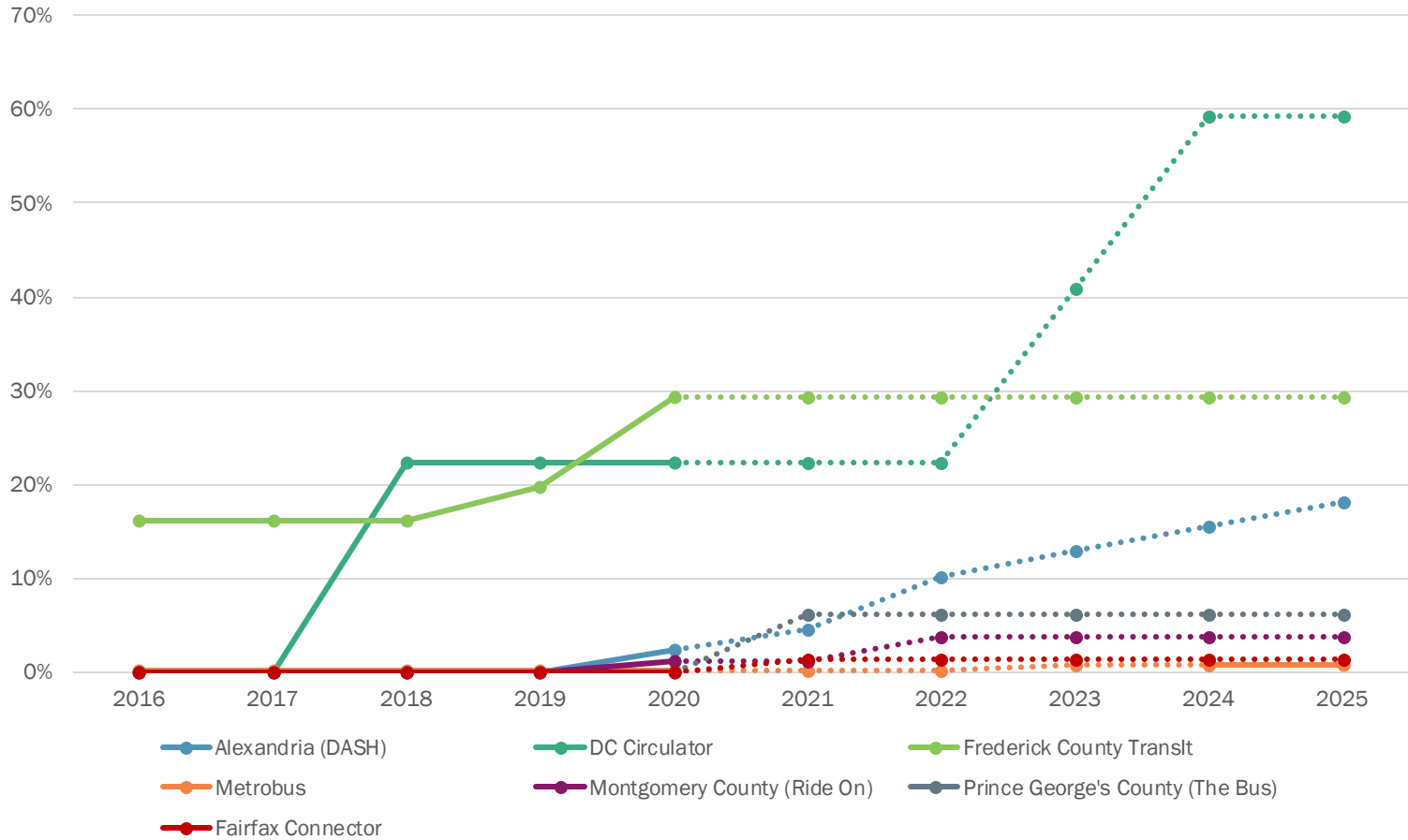
Regional E Bus Fleet by year



Source: Mixed: NTD RVI & review of local reports / articles



Fleet Conversion by Agency



Source: Mixed: NTD RVI & review of local reports / articles



Procurement Concerns

COMMON E-BUS CONCERNS

- Buy America & BEBs
- Performance of BEBs
- Associated costs
- Managing expectations of e-bus deployment and impacts

Set a goal that all new American-built buses be zero-emissions by 2030, which will create significant demand for the manufacturing of new, clean American-built buses utilizing American-manufactured inputs – and accelerate the progress by converting all 500,000 school buses in our country – including diesel – to zero emissions. Biden will ensure that the existing – and future – workforce is trained and able to operate and maintain this 21st century infrastructure.

Source: President Joe Biden’s Build Back Better Plan – Clean Energy

Table 12: Proposed solutions to e-bus barriers common in all archetypes

Barriers	Solution 1	Solution 2	Solution 3	Solution 4	Solution 5	
Fleet operations	Uncertain residual value	Guaranteed loans	Regulation on used batteries disposal	Battery lease	Extended manufacturer warranty	Extended lease or loan for the vehicle
	Cold weather – higher energy consumption	Renewable biofuel powered generators	Heat pumps	Trial bus in winter to understand additional power needed for heating		
Vehicle	Capital costs	Capital or operational lease	Battery lease	Joint purchase agreements	Extended lease or loan for the vehicle	
	Underdeveloped supply chain	Fleet electrification targets can send clear signal to bus manufacturers				
Battery	Unclear end-of-life options	Battery lease	Extended manufacturer warranty	Extended lease or loan for the vehicle	Regulation on used battery disposal	
	Falling battery prices	Vehicle lease				
Charging infrastructure	Capital cost	Standardization	Bundling the price of a charger with the price of a bus during the tendering process	Partnership with utilities		
	Installation costs	Standardization	Partnership with utilities			
	Public perception and space restrictions	Education	Re-locate bus stops			
Electricity supply and grid issues	Location of electricity supply	Partnership with utilities	Consider new depot in new location	Solar panels at depot		
	Constrained grid areas	Batteries assisted chargers	Solar panels and depot			
Financing	Uncertainty for finance companies	Bus manufacturers could take on the role of financing companies	Government guaranteed loans	Involve finance companies in long term strategy		
Government support	Lack of indirect support measures (low emissions zone)	Involve national governments in e-bus deployments	City authorities explore introducing such policies			

Source: Bloomberg: Electric Buses in Cities Driving Towards Cleaner Air and Co2



Next Steps

Regional Coordination:

- Energy infrastructure investments
- Training programs / workforce development
- Harmonized policies and utility rate structures
- Additional funding for e-bus and facility conversion
- Fleet lifecycles / replacement timelines



Source: Transportation and Climate Initiative



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National Capital Region
Transportation Planning Board

Appendix – BEB Procurement / VAMS (by year)

Year	Alexandria (DASH)	DC Circulator	Frederick County Transit	Metrobus	Montgomery County (Ride On)	Prince George 's County (The Bus)	Fairfax Connector
2016	0	0	5	1	0	0	
2017	0	0	0	0	0	0	
2018	0	14	0	0	0	0	
2019	0	0	1	0	0	0	
2020	3	0	3	0	4	0	
2021	3	0	0	0		6	4
2022	8	0	0	0	10	0	
2023	4	14		12			
2024	4	17					
2025	4						

AGENCY VAMS		*assumes 2020-2022 projection growth is only via increase in e-bus procurement and no other buses					
Year	Alexandria (DASH)	DC Circulator	Frederick County Transit	Metrobus	Montgomery County (Ride On)	Prince George 's County (The Bus)	Fairfax Connector
2016	85	67	31	1503	338	93	
2017	85	67	31	1488	344	93	
2018	86	63	25	1478	369	93	
2019	128	61	28	1558	369	93	308
2020	131	61	31	1558	373	93	308
2021	134	61	31	1558	373	99	312
2022	142	61	31	1558	383	99	312
2023	146	75	31	1570	383	99	312
2024	150	92	31	1570	383	99	312
2025	154	92	31	1570	383	99	312

Source: Mixed: NTD RVI & review of local reports / articles

