

# Climate Benefits of Transit in Northern Virginia

Fairfax County Board of Supervisors Transportation Committee September 17, 2024

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## **Study Outline**

- 1. Overview of how transit generally benefits the climate
  - Different types of emissions
  - National transportation trends
  - Trends in the transit industry
- 2. Summary of Northern Virginia policies that intersect transit and the environment.
- 3. Climate benefits of transit are quantified.
- 4. Concludes with recommendations for the region.





## Why is this topic important for NoVA?



- Transportation is the greatest source of US emissions
- Northern Virginia's share of transportation emissions is higher than the Washington, DC region average
- Transit can help mitigate transportation emissions
- Post-pandemic transit ridership has recovered slower than driving and this has potentially significant climate impacts



"Metro's core business–moving people on public transportation–is inherently sustainable. Every trip taken with Metro instead of a car reduces the region's carbon footprint." – Metro 2020-2021 Sustainability Report  Commuter bus and commuter rail disproportionately benefit emissions

**Key Finding #1** 

 Pandemic has had a big impact to emissions reduced with transit

### The use of public transit in Northern Virginia reduces 120,000 to 160,000 Metric tons of $CO_2$ annually<sup>1</sup>.

- - FY 2017 FY 2016 FY 2015 FY 2014 FY 2013







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13,500,000 gallons of gasoline

**27,000** cars driven for one year (cars end-to-end would go from Washington, DC to Richmond, VA)

**33** wind turbines running for a year

Over **15,000** homes' energy use for one year

Almost **2,000,000** tree seedlings grown for 10 years







## Key Finding #2

All bus fuel types, even diesel buses, are a much greater environmental option than using cars.

- Transit vehicles can operate less than half full and still have lower emissions than gasoline cars
- The <u>more</u> a bus is used, the <u>lower</u> the number of bus passengers required to replace a gasoline car
- Electric cars are more competitive when it comes to reducing emissions





![](_page_5_Picture_8.jpeg)

85% of all on-road cars need to be electric for electric buses to be as good for the climate as diesel buses are today.

 Electric buses are important for the future, but diesel buses are already a better climate option than cars today

#### Breakeven analysis considering EV car composition

50 45 Passengers per Trip fo Option Bus (Diesel) --- Bus (CNG) —Bus (Electric) 40 35 **Better Climate** 30 25 20 Average Bus | Buses to be | 15 10 0% 20% 80% 40% 60% 100% **Electric Cars as a Percentage of All Cars** 

![](_page_6_Picture_5.jpeg)

### Key Finding #3

### **Key Finding #4** There are opportunities for the region's jurisdictions and transit agencies to learn from each other's policies.

- 27 transit-environmental policy documents were reviewed
- Content was categorized in three ways:
  Environmental Goals
  - Transit Actions
  - Performance Measures
- Very little overlap in policies between jurisdictions

#	Transit Actions	Examples
1	Increase Ridership	Improve equity, improve rider experience, incentivize TOD
2	Vehicle	ZEB, electric paratransit or staff vehicles, renewable natural gas
3	Operations	Increase service, utilize regenerative braking
4	Facilities	Energy efficient lighting, solar panels
5	Other Infrastructure	Bus priority infrastructure, on-route charging
6	Studies	ZEBs, transit facilities, alternative fuels
7	Other	Increase education, energy audits

![](_page_7_Picture_8.jpeg)

## Recommendations

#### **1. Shorter Term**

- Increase ridership
- Reduce miles and hours when a transit vehicle is not taking passengers ("deadheading") where possible

#### 2. Medium Term

- Increase the amount of transit in the region
- Speed up buses using bus priority infrastructure and policies

#### 3. Longer Term

Transition to zero emission buses

"...the environmental benefits of transit only arise from many people riding the bus rather than driving, taking a taxi, or otherwise getting a ride in a private vehicle." – Alexandria Transit Vision Plan

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![](_page_8_Picture_11.jpeg)

# **Thank You!**

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## Read the full report at www.novatransit.org

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