





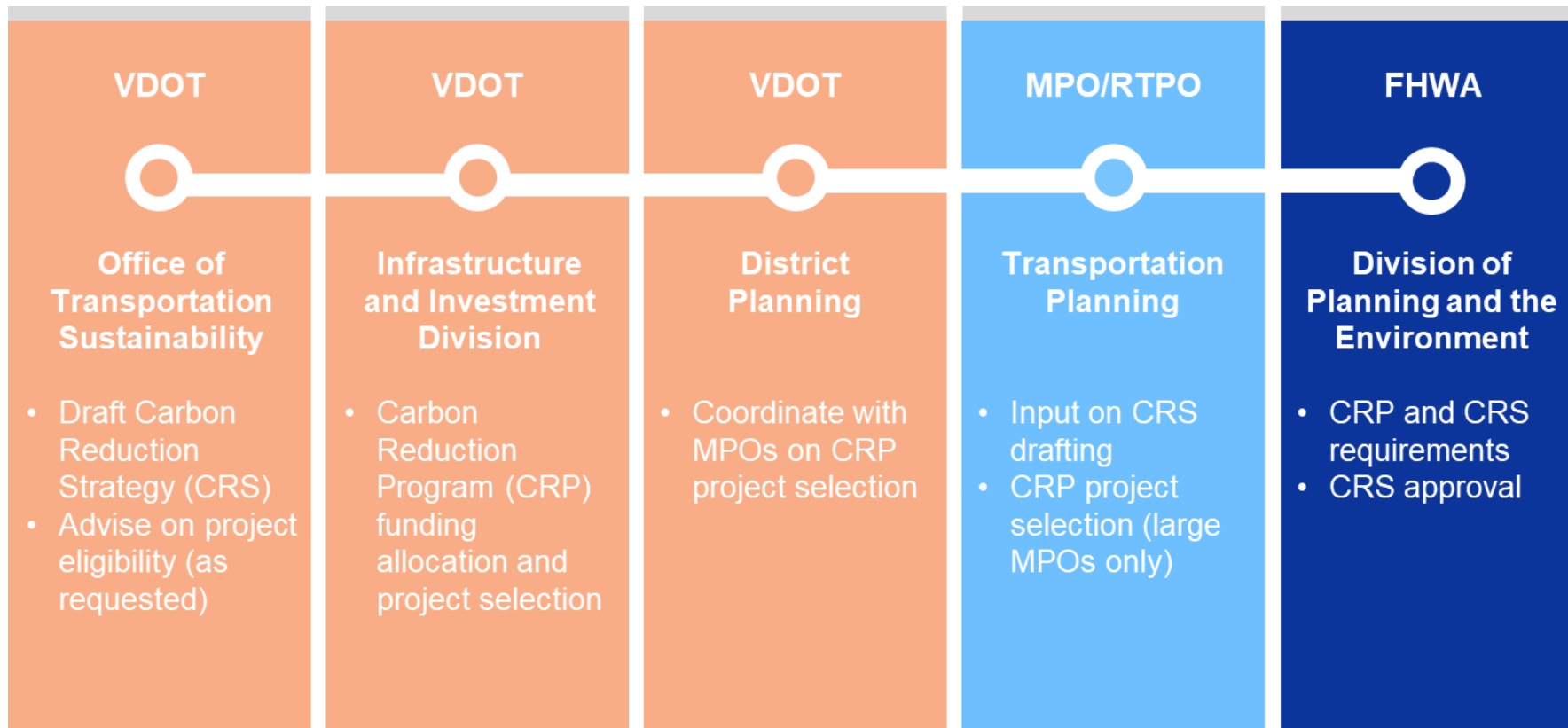
TPB Technical Committee  
Agenda Item 4  
October 6, 2023

# VDOT Carbon Reduction Strategy

Erin Ervin Belt, Decarbonization Lead

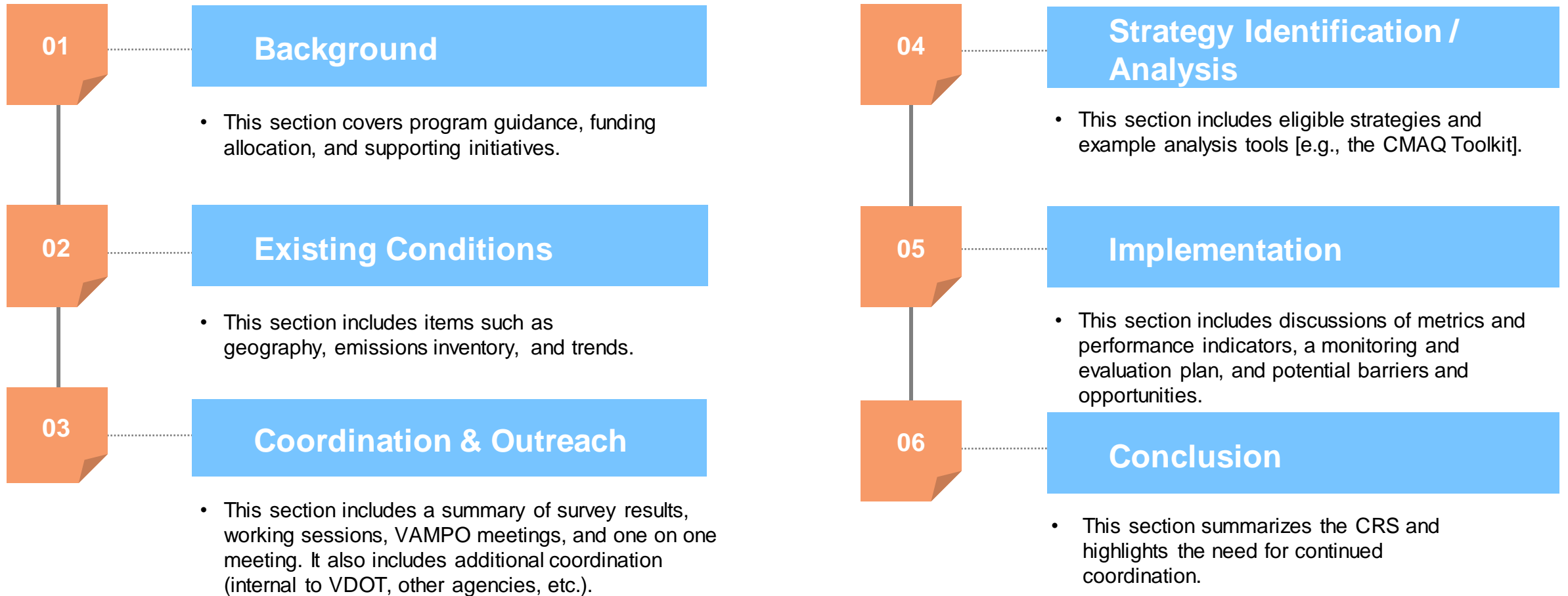
10/06/23

# Personnel and Roles





# VDOT CRS DRAFT Document Outline



# CRP Eligible Activities

## CATEGORIES



### Transportation Choice

- Public Transportation
- Bike lanes
- Sidewalks and crosswalks
- On-road and off-road trails



### Efficiency & Alternative Fuels

- Alternative fueling/charging infrastructure
- Truck stop electrification
- Diesel engine retrofits
- Energy efficient street lighting and traffic control devices



### Congestion Management

- Advanced transportation and congestion management technologies
- Intelligent transportation systems
- Traffic flow improvements
- Congestion pricing



### Low Emissions Construction Practices

- Zero-emission construction equipment and vehicles
- Sustainable pavements and construction materials

# Initial Public Survey Results – May 2023

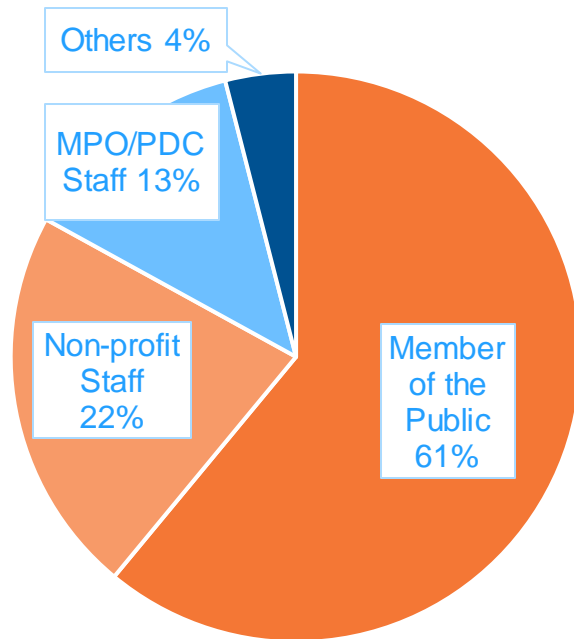
216  
VIEWS

46  
PARTICIPANTS

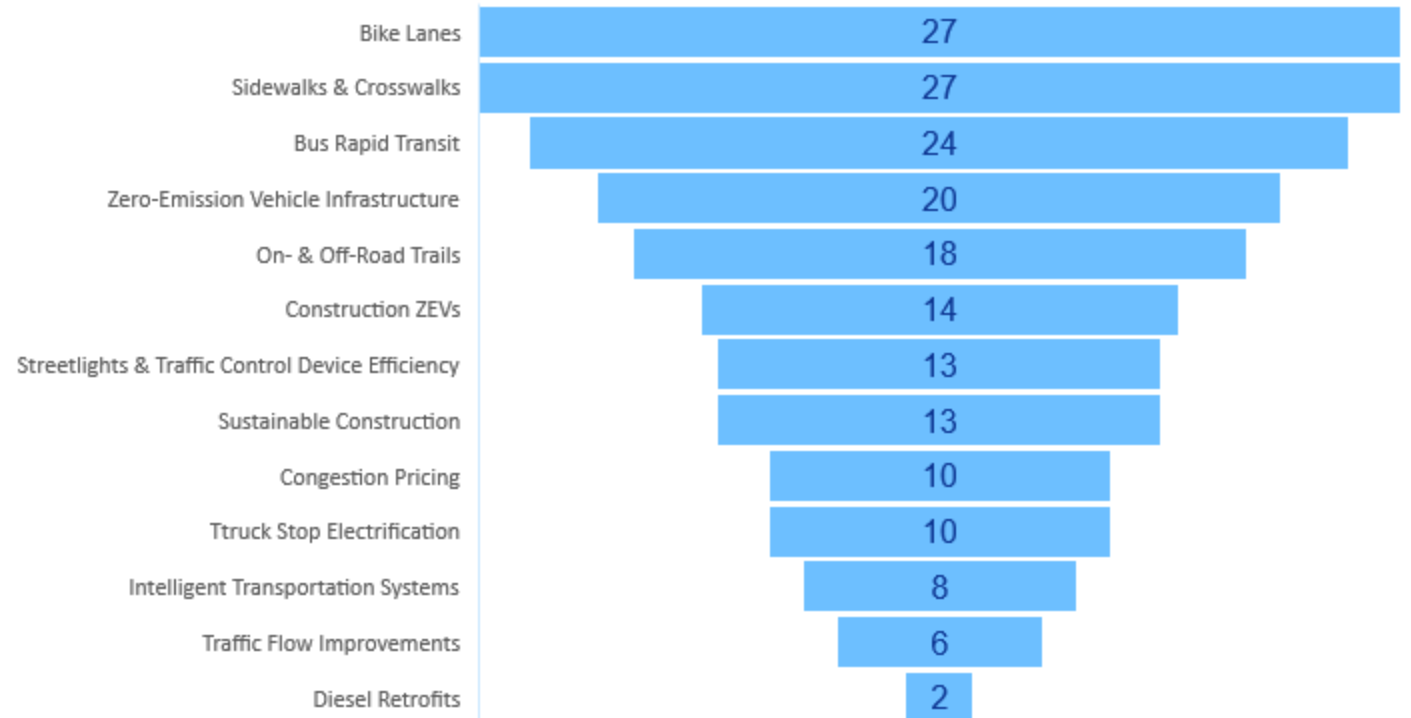
297  
RESPONSES

105  
COMMENTS

## PARTICIPANTS ROLE IN THE PLANNING PROCESS

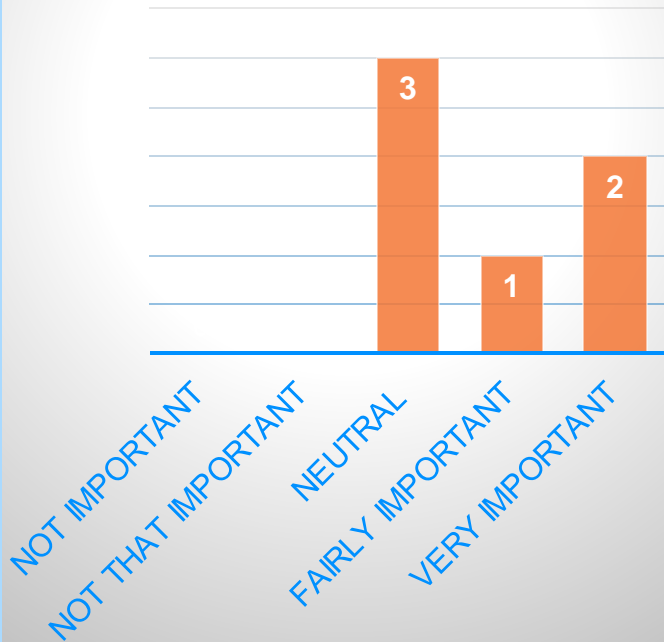


## CARBON REDUCTION STRATEGIES

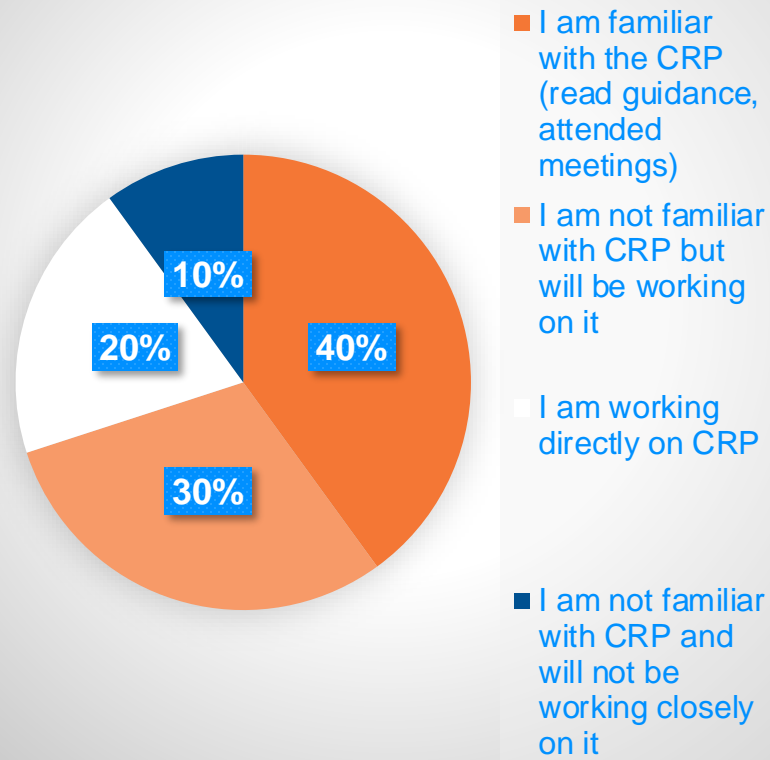


# MPO Survey Results – September 2023

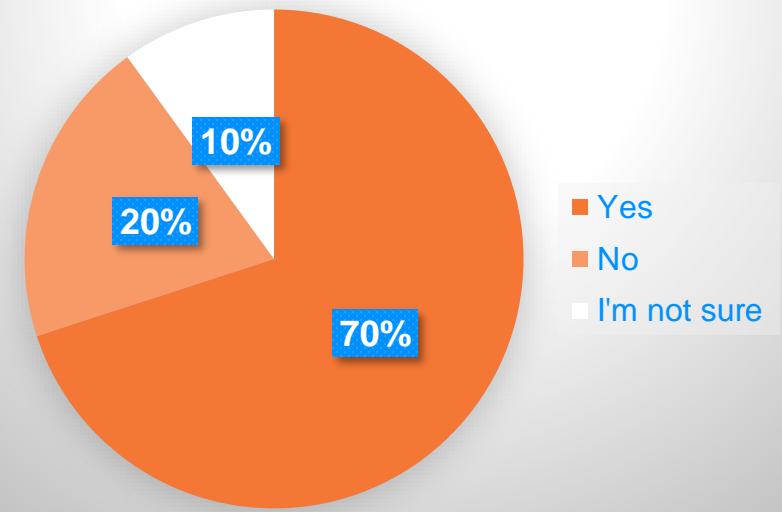
How important is addressing transportation carbon emissions to your organization?



What is your level of familiarity with CRP?



Does your organization have any existing climate-specific plans, projects, policies focused on reducing transportation emissions?





# Carbon Reduction Strategies

## *What's important to stakeholders?*

- Public Transportation
- Bicycle & Pedestrian Support
- Electric Vehicles & Charging



# Co-Benefits of Reduction Strategies

*All participants said they factored co-benefits into their strategy responses*



**SAFETY**



**ECONOMIC  
DEVELOPMENT**



**HEALTH &  
QUALITY OF  
LIFE**



**ACCESSIBILITY**

# Challenges When Implementing Strategies

## Top Responses



EXISTING  
LAND USE



FUNDING



POLITICS

## Other Challenges

limited staff capacity

competing priorities

another word for carbon

powerful interests

one size does not fit all

misconception of the problem

rural context

hesitancy for bike ped

relative effectiveness

persistent car culture

quantifying outcomes

industry growth vs environment

leadership buy-in

safety perceptions

planning philosophy

poor existing infrastructure

# Success Stories

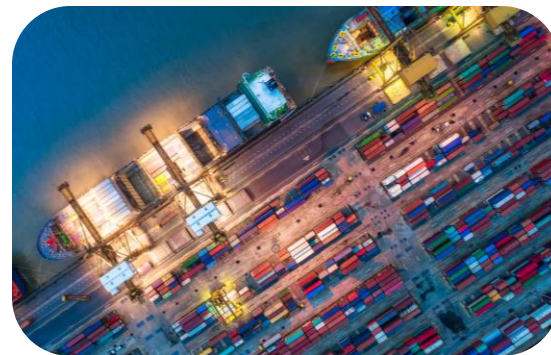
## *Active Transportation*

- Bicycle / pedestrian Infrastructure
- Trails / Regional Greenway Network
- Sidewalks
- Quality public spaces



## *Reduce Vehicles*

- Barge program to reduce trucks
- Microtransit
- Regional transit between work centers in different counties
- Increase rider transit use / free transit



# Analysis Tools

## Bicycle and Pedestrian Improvements

This calculator will estimate the reduction in emissions resulting from improvements to bicycle and pedestrian infrastructure and associated mode shift from passenger vehicles to bicycling or walking, including but not limited to sidewalks, dedicated bicycle infrastructure, improved wayfinding, mid-block crossing installations, bike share systems, and bike parking improvements.

**Navigator**

Bicycle and Pedestrian Improvements

**INPUT**

[User Guide](#)

[Reset Interface](#)

(1) What is your project evaluation year? - Select from list -

(2) Estimate the shift in daily motorized passenger vehicle trips to non-motorized travel due to the bicycle and pedestrian project.

Daily Passenger Vehicle Trips

Before	After	Change

(3a) Select the data type used for entering the typical one-way trip distance of passenger vehicles below:

Trip Distance Source

- Select from list -   [← Fill National Values](#)

(3b) If you selected "Average" above, enter the typical one-way trip distance. If you selected "Distribution" above, enter the typical distribution of one-way trip distances.

Typical Trip Distance (miles one way)	Distribution of Trip Distances (daily fraction per mileage bin)					
	x < 1	1 ≤ x < 2	2 ≤ x < 3	3 ≤ x < 4	4 ≤ x ≤ 5	Sum

[Calculate Output](#)

**OUTPUT**

Pollutant	Total	Units in kg/day unless otherwise noted
Carbon Monoxide (CO)	0.000	
Particulate Matter <2.5 μm (PM <sub>2.5</sub> )	0.000	
Particulate Matter <10 μm (PM <sub>10</sub> )	0.000	
Nitrogen Oxide (NOx)	0.000	
Volatile Organic Compounds (VOC)	0.000	
Carbon Dioxide (CO <sub>2</sub> )	0.000	
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	0.000	
Total Energy Consumption (MMBTU/day)	0.000	

CMAQ Emissions Calculator Toolkit

**ETC Explorer - Homepage** | ETC Explorer - National Results | ETC Explorer - State Results | ETC Explorer - Add Your Data (National and State Results) | Transportation Insecurity Analysis Tool

## USDOT Equitable Transportation Community (ETC) Explorer

Quick start: Select a state from the dropdown  
For instructions on this tool's features, click the arrow on the left side of the page

State Selector: Virginia

County Selector: Select State First

Community Selector: All Communities

MPO Selector: All MPOs

**Total Population Living in the Selected Project Area**

8.5M

**Total Population Living in Disadvantaged Census Tracts in the Selected Project Area**

1.9M

**% of Disadvantaged Census Tracts in the Selected Project Area**

25%

**Overall Disadvantage Component Scores - Percentile Ranked**

Component	Score
Climate & Disaster Risk Burden	44%
Environmental Burden	47%
Health Vulnerability	45%
Social Vulnerability	42%
Transportation Insecurity	54%

Relatively Low ← → Relatively High

**Climate & Disaster Risk Burden - Percentile Rank**

Indicator	Score
Anticipated Changes in Extreme Weather	51%
Annualized Disaster Losses	38%
Impervious Surfaces (from Land Cover)	43%

Relatively Low ← → Relatively High

USDOT Equitable Transportation Community (ETC) Explorer

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# THANK YOU

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If you have questions or comments, please reach out to VDOT CRP at [CarbonReduction@vdot.virginia.gov](mailto:CarbonReduction@vdot.virginia.gov)

