Executive Summary

VISUALIZE 2050

National Capital Region
Transportation Planning Board

Approved December 17, 2025

The National Capital Region

The National Capital Region Planning Area spans roughly 3,500 square miles across 22 local jurisdictions, including Washington, DC, and portions of Maryland and Virginia. Nearly 6 million people call the region home and millions of visitors come here to see the many historic places, visit world-renowned museums, and conduct business. The region's multimodal transportation network is the backbone for navigating daily life, from commuting and accessing services, to transporting goods, for residents and visitors alike.

National Capital Region Planning Area

What is Visualize 2050?

Visualize 2050 is the 2025 update to the National Capital Region Transportation Plan, a federally required document capturing a snapshot of the current outcomes of the region's ongoing, performance-based metropolitan transportation planning process. Developed by the National Capital Region Transportation Planning Board (TPB) and its partners, this plan reflects a thorough reexamination of the region's previously identified transportation projects to account for current travel patterns, changes in forecasts growth, and the region's multi-sectoral goals. The plan outlines current conditions, key issues, anticipated funding through 2050, and priority investments to operate, maintain, and make improvements to the region's transportation infrastructure and services. The plan showcases the transportation system envisioned for 2050 and presents the level of performance anticipated by this system, based on forecasted changes in travel demand. Lastly, the plan acknowledges key challenges remaining beyond the current plan and calls for continued regional collaboration and commitment to address them and achieve shared goals.

Visualize 2050 Chapters

- **Introduction**
- **Transportation System Today**
- **Current Transportation System Performance**
- **Societal Topics**
  Economy, environment, public health, emerging technologies
- **Financial Plan**
- **2050 System & Performance**
  System improvements, future access, future congestion, environmental forecast
- **Planning Together for Further Progress**

The Region: 2025 and 2050

By 2050, the region is predicted to add 1.2 million residents (21 percent increase), 55,000 households (24 percent increase), and 800,000 jobs (24 percent increase). Throughout the region—from Frederick, MD, to Dumfries, VA, and from Bowie, MD, through downtown DC to Gainesville, VA, and beyond—a robust world-class multimodal transportation system will be essential to meeting the region's growing mobility and accessibility needs while accommodating the predicted growth.

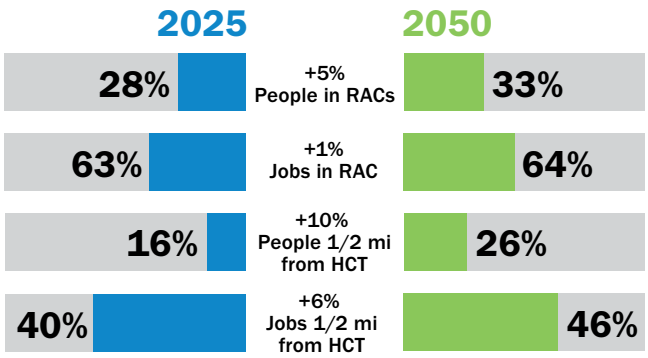
Population Growth +21%
Today: 5.95M
2050: 7.18M

Household Growth +24%
Today: 2.25M
2050: 2.80M

Employment Growth +24%
Today: 3.4M
2050: 4.2M

Local land use practices will continue to guide more people and jobs toward the region's 145 Regional Activity Centers (RACs)[1] and to areas within a half mile of High-Capacity Transit (HCT)[2] stations. In 2025, 148 HCT stations are located within RACs, and that number is projected to rise to 246 by 2050. At the same time, 10 additional RACs will have direct access to HCT, to better align transit investments with growth centers which would lead to increased transit usage.

Percent of People and Jobs in Regional Activity Centers (RACs) and near High-Capacity Transit (HCT) Stations



SeanPavonePhoto/iStock

1 RACs are COG-designated places with concentrations of employment or mixed uses.

2 HCT, also known as fixed-guideway transit, is defined as Metrorail, commuter rail, light rail, streetcar, and bus rapid transit.

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TPB'S VISION STATEMENT

The metropolitan Washington region remains a vibrant world capital, with a transportation system that provides efficient movement of people and goods. This system promotes the region's economy and environmental quality and operates in an attractive and safe setting—it is a system that serves everyone. The system is fiscally sustainable, promotes areas of concentrated growth, manages both demand and capacity, employs the best technology, and joins rail, roadway, bus, air, water, pedestrian and bicycle facilities into a fully interconnected network.

TPB'S VALUES

ACCESSIBILITY All people who use the transportation system in the region should have reasonable physical and affordable access to travel by road, transit, biking, walking, micromobility, ferry, and to housing choices.

PROSPERITY The regional transportation network should be an asset to attract high quality employers, minimize economic disparities, and enhance each jurisdiction and the region through balanced growth and access to high quality jobs and education for all levels.

SUSTAINABILITY Transportation infrastructure and programs in the region should be environmentally, structurally, and financially viable.

AFFORDABILITY Readily available multimodal travel options throughout the region that enable safe and efficient access to jobs, housing, services, and other destinations.

LIVABILITY Vibrant, healthy, and safe neighborhoods with a range of travel and housing choices that support economic well-being.

TPB'S GOALS

SAFETY Pursue the safety of all users, including travelers and maintenance and operations personnel alike, on every transportation mode.

WELL-MAINTAINED INFRASTRUCTURE Maintain the transportation system's infrastructure in a state of good repair to provide reliable, safe, and comfortable mobility to all its users. Maintaining the existing system is a top priority that takes precedence over creating new systems.

TRAVEL TIME RELIABILITY Enable reliable travel times on all transportation options to get the traveler to their destination on time every time.

EFFICIENT SYSTEM OPERATIONS Implement efficient transportation systems management and operations within and across different travel modes.

AFFORDABLE AND CONVENIENT MOBILITY OPTIONS Provide affordable, practical multimodal options.

ENVIRONMENTAL PROTECTION Provide and incentivize methods that build, operate, and maintain the transportation system in a manner that provides for healthy air, water, other environmental factors, and mitigates the effects of extreme weather.

RESILIENT REGION Facilitate mobility for people in the face of one or more major obstacles to normal transportation system functionality. These obstacles could include extreme weather events, major crashes and incidents, and equipment or infrastructure failures.

LIVABLE AND PROSPEROUS COMMUNITIES Support regional economic competitiveness, opportunity, and a high quality of life for all people.

Getting Around the Region

The region depends on the availability of multiple travel modes to facilitate reliable mobility and access to destinations. The ongoing and planned coordination of transportation infrastructure, services, and land uses reflects the region's commitment to multi-modalism.

The Regional Core, the historic, dense, mixed-use center, will remain the area with the most transit, walking, and biking in 2050. Half of all person trips here are expected to use these modes, with the other half using a car. In the Inner Suburbs, where most trips originate, dispersed land use and scattered RACs limit non-driving options, though nearly a quarter of work trips will still be by transit. In the low-density Outer Suburbs, fewer RACs and limited HCT access mean travel is dominated by driving, with only two percent of all trips by transit.

MODE SHARE FOR ALL TRIPS 2025→2050

41%→38%
drive alone trips

40%→40%
carpool trips (2 or more people per vehicle)

12%→14%
walk/bike trip

7%→8%
transit trips (bus or rail)

Collectively, from 2025-2050, across all trips, the share of transit, walking, and biking will increase. Carpool trips will continue to be roughly 40 percent of all trips while drive alone trips will decrease by three percent.

ROADWAYS

Most person-trips today are by driving, and this is predicted to still be the case in 2050. Across all trip purposes, autos with two or more people are forecast to be more prevalent than driving alone and auto-based commute trips are forecast to decline by three percent as people choose other modes to access work.

Maryland Department of Transportation/Flickr

Visualize 2050 reflects a targeted approach to roadway capacity expansion, adding three percent or 530 lane miles to the current 17,000+ lane miles. Of these added lane miles, almost 240 are on arterials and 86 are on tolled facilities, mainly high-occupancy toll (HOT) lanes. Many of the proposed roadway projects, especially new, widened, and extended roads that include bicycle/pedestrian facilities, will incorporate design changes and upgraded streetlight technologies to improve safety and mobility, creating a roadway network in 2050 that better accommodates multiple travel modes.

Although electric vehicles (EVs) accounted for less than three percent of all light-duty vehicles in 2023, they represent the fastest growing vehicle category with the number of battery EVs increasing nearly three times between 2020 and 2023. As the number of EVs in the region is expected to continue to grow, in response, the region's existing network of 1,500+ publicly available EV chargers is forecast to grow but not likely at the rate needed to support

the anticipated trend. Programs that promote and support the use of transit, walking/bicycling, and carpools to manage travel demand, such as Commuter Connections, will continue to encourage alternatives to driving alone for work commute trips.

Roadways are critical to support and grow the region's economy. Freight trucks currently transport about 160 million tons of goods annually on our roadways. On local streets, cargo vans and bikes help finalize deliveries to businesses and homes to meet rising e-commerce demand. Today, freight trucks can use express lanes on I-66, and by 2050 this access is planned to be extended to express lane corridors on I-495 and I-95, giving truckers more ways to bypass peak-hour traffic delays.

RAILWAYS

Branching out from the urban core of Washington, DC, one of the nation's busiest rail transit systems serves as the backbone of regional mobility. The Washington Metropolitan Area Transit Authority's (WMATA) Metrorail, Maryland Area Regional Commuter (MARC) commuter rail, and Virginia Railway Express (VRE) commuter rail together moved 650,000 riders on a typical weekday before the COVID-19 pandemic. Today, that number is more than 490,000 riders. While still lower than pre-pandemic, it represents three years of nation-leading growth in ridership.

The current 304 rail miles and 144 rail stations are planned to be 322 miles and 171 stations by 2050. Most of this added rail transit capacity will come from the *Purple Line Light Rail Transitway: Bethesda Metro Station to New Carrollton Metro Station*, a 16-mile, 21-station corridor that will link RACs in Prince George's and Montgomery counties. Commuter rail is also slated to be improved, e.g., a new VRE station in Potomac Shores and operational enhancements that ease freight bottlenecks. At the station level, upgrades in lighting, accessibility, security, communication, and wayfinding will create safer, more welcoming environments—contributing to a better experience for all rail transit users across the system.

The economy is also supported by about 250 miles of track on which two freight companies move over 6.7 million tons of goods each year into the region. Planned projects like the *New Long Bridge over the Potomac River* and the *Alexandria Fourth Railroad Track: South of George Washington Parkway to South of Telegraph Road* will increase freight and passenger rail capacity in the region, supporting movements along the East Coast.

BeyondDC/Flickr

BUS TRANSIT

The region's extensive bus network includes 15 local bus systems, along with three commuter bus systems, providing essential links for hundreds of thousands of community members. The region's bus systems facilitate more than 450,000 weekday person trips. For riders with disabilities, 11 paratransit services and over 100 specialized transportation service providers offer on-demand and shuttle rides, and these services will continue to be supported over time.

By 2050, the current 14 lane miles of bus rapid transit (BRT) and 28 BRT stations are planned to grow to 93 lane miles and 118 stations. More routes are planned to operate in their own lanes separate from general traffic, improving travel time and reliability. Commuter, express, and local bus riders will benefit from services using high-occupancy vehicle (HOV) and HOT lanes at no charge, allowing faster and more dependable travel throughout the region.

A range of other upgrades are on the docket for improving bus travel, such as transit signal priority and queue jumps at congested intersections, expansion of all-door boarding, optimization of bus routes and bus stop locations, and the addition of dedicated or peak-hour bus lanes on busy corridors. Bus technology and power sources will continue to evolve. As aging diesel fleets are phased out, local transit agencies will replace them with clean fuel buses and dedicated funding will bring EV chargers for buses across the region.

Pierre Gaunaurd/COG

Joe Flood/Flickr

WALKING, BIKING, AND MICROMOBILITY

Walking, biking, and micromobility are most used for trips in and around more dense, mixed-use urbanized communities. Complete Streets policy implementation has become standard practice and, where applicable and possible, all future applicable projects will include bicycle/pedestrian accommodations.

The region's 400+ miles of bike lanes will continue to expand through roadway projects that integrate additional bicycle facilities, as well as sidewalks, shared-use paths, safer crossings, and other amenities that support biking and walking. Many projects will incorporate access to destinations with new off-road trails or fill gaps between existing trails. With these changes, the ability for people to walk, bike, or use micromobility to reach daily destinations will become easier and safer while also providing public health benefits.

Funding the Future System

Funding for transportation projects and programs to support ongoing operations, state of good repair, and expansion of the region's system—from highways and local roads, rail and bus transit, to sidewalks and trails—comes from a variety of federal, state, local, private, and other sources.

Revenues that will fund the future transportation system will come from five different sources. Most

will come from state funding (51 percent), followed by federal funds (14 percent), fares and tolls (14 percent), local funds (18 percent), and private sources (2 percent).

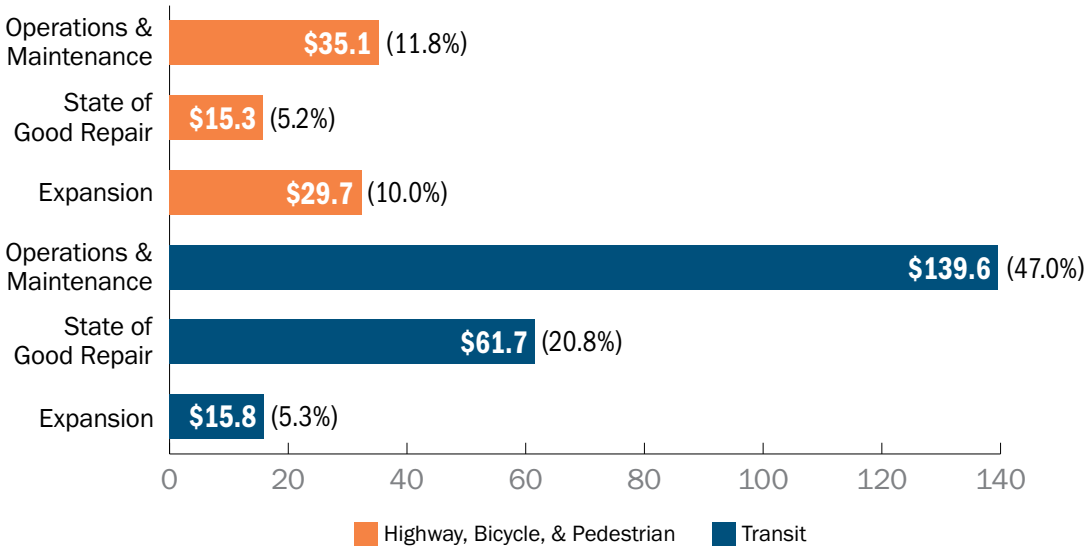
A majority, 85 percent, of the anticipated funding will be needed to operate and maintain the current multimodal system in a state of good repair. These funds will support critical work like repaving roads, rehabilitating or replacing bridges (including the I-495 American Legion Memorial Bridge), and operating and maintaining Metrorail, VRE, MARC, and bus transit services and vehicles. Consequently, only 15 percent of the total anticipated funding will be available to expand the multimodal system.

Transportation System Performance

With about 80 percent of the future population and households already on the ground today, travel behavior is expected to remain relatively stable with only modest shifts across travel modes. Today, driving alone as a single-occupant vehicle (SOV) accounts for 41 percent of all trips, a share projected to decline by 2050 to 38 percent. Given the future multimodal investments, non-SOV modes like carpooling, walking, biking, and transit, are expected to grow from 59 percent to 62 percent of all trips. Most of this increase will come from growth in walking and biking from 12 to 14 percent. Non-SOV modes are also expected to play a larger role in commuting, increasing from 40 to 43 percent of all work trips.

The additional growth and development in the region will result in more travel and an increase in total vehicle miles traveled. Even as ridesharing and transit options expand, single-occupant automobile travel will continue to dominate the region (81 percent in 2025 and 78 percent in 2050). With congestion already high during commute hours, anticipated growth and the persistent reliance on single-occupant vehicles are expected to further increase delays on the region's roadways. As a result, job access within a 45-minute auto commute is expected to fall by five percent (about 50,000 jobs), while average delay per trip will rise from 4.1 minutes to 5.9 minutes (44 percent increase). But without the investments proposed in Visualize 2050, the average regional job accessibility by car would decline by 11 percent as opposed to the projected five percent decline. The planned changes in land use and investments in transit and in pedestrian and bicycle facilities are expected to have a meaningful impact on improving travel. When combined, these modes are

Expenditures by Type and Mode in Year of Expenditure Dollars (Billions), 2026-2050



forecast to increase from 19 percent to 22 percent for all trips on a typical day. Also, access to jobs by transit is projected to rise by 16 percent (about 62,000 jobs), driven by the planned HCT expansions and the growing concentration of jobs and residents near transit stations. Although total vehicle miles traveled and congestion are expected to increase, miles traveled in an automobile by the average resident are expected to decrease by five percent as some residents will travel shorter distances.

The impact of investments in Visualize 2050 will vary depending on local land use characteristics and where future growth is concentrated. More people will walk, bike, or take transit in areas that are denser and that have more diverse land uses closer together. This suggests that travel behavior, especially that of residents, does respond to changes to land use and transportation infrastructure.

Environmental Forecasts

Despite continued growth in travel demand, on-road vehicle emissions are projected to decline steadily through 2050 as EVs and newer, cleaner, and more efficient cars and trucks replace older models across the region's fleet. Additional reductions are expected from cleaner fuel formulations, shifts in land use and development patterns, expanded investments in transit and alternative travel options, and more efficient roadway operations. According to TPB staff's extensive air quality conformity analysis, the region's anticipated growth and planned transportation

Richard Vaillancourt/Flickr

improvements will meet federal ozone air quality standards.

Many projects in Visualize 2050 also incorporate features with the potential to strengthen the resilience of the transportation system. Road and bridge upgrades will be better equipped to withstand flooding, new transit and pedestrian infrastructure will provide safer and more reliable options during periods of extreme heat, and continued restoration and maintenance of bridges will help keep them in a state of good repair to endure severe weather events.

Moving Forward as a Continuously Evolving Region

The challenges that remain reflect the region's high aspirations, embodied in its multi-sectoral goals to achieve prosperity through sustainable and accessible livability for all. A review of the past

Jeff Morfit/Flickr

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25 years shows how 22 jurisdictions across two states and a federal district have come together to make significant improvements in many areas.

Since then, the region added about two million people and one and a half million more jobs, and it expanded the transportation network to include 15 bus systems, complementing the urban rail and two commuter rail services. As a result, two-thirds of the jobs and half the population live in mixed-use, high-density regional activity centers or within one-half mile of a high-capacity transit station. As a leader in carpools, vanpools, and bikeshare participation, the region now sees walking and bicycling account for over 20 percent of all trips. The region has gone from non-attainment to attainment of three federal air quality standards even as the standards became more stringent.

These outcomes demonstrate the substantial progress made over the last several decades. With its commitment to coordinate transportation, land use, and environmental planning with investment decisions while taking full advantage of technological advancements, the TPB is confident that Visualize 2050 will provide meaningful gains in tackling the remaining challenges over the decades to come.

Moving forward, the region will continue to plan together **for better travel tomorrow!**

Rachel Beyerle/COG

About the TPB

The National Capital Region Transportation Planning Board (TPB) is the designated Metropolitan Planning Organization (MPO) for the Washington region. The TPB is housed at and staffed by the Metropolitan Washington Council of Governments (COG). As the region's MPO, the TPB is responsible for conducting the federally mandated transportation planning process for the metropolitan area, which includes developing and updating the regional long-range transportation plan, known as Visualize 2050, and the Transportation Improvement Program (TIP). The TPB's membership is made up of representatives from the District of Columbia, Maryland, and Virginia departments of transportation, the Washington Metropolitan Area Transit Authority (WMATA), local governments, and state legislatures.

The preparation of this report was financially aided through grants from the District of Columbia Department of Transportation; Maryland Department of Transportation; Virginia Department of Transportation; the Virginia Department of Rail and Public Transportation; U.S. Department of Transportation, Federal Highway Administration; and the U.S. Department of Transportation, Federal Transit Administration.

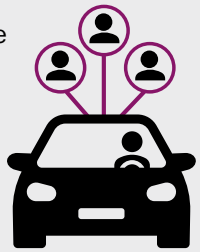
Future Challenges

CONTINUED TRAVELER FATALITIES & SERIOUS INJURIES

Safety challenges are unlikely to be fully resolved, as some of the underlying contributing factors—large vehicles, high-speed roadway designs, and distracted or unsafe driving—are complex and far-reaching.

SINGLE-OCCUPANT VEHICLES CONTINUE TO BE MOST PEOPLE'S CHOICE FOR COMMUTING

Many residents, particularly in the region's inner and outer suburbs, will continue to face limited access to timely multimodal options to access work due to long travel distances and impracticality of travel times.



ANTICIPATED RISKS TO INFRASTRUCTURE FROM NATURAL HAZARDS

Increased flooding and extreme heat will mount more pressure on essential, aging infrastructure.

INSUFFICIENT TRANSIT REVENUE TO SUSTAIN, LET ALONE INCREASE SERVICES

There continues to be challenges with adequately funding the Washington Metropolitan Area Transit Authority (WMATA) and local transit service needs with sustainable, predictable, long-term sources. Financial uncertainties will hinder the region's ability to elevate the transit system to a world-class modern standard.

CONTINUED INCREASE IN TRAFFIC CONGESTION & DELAYS

Congestion and delays are forecasted to persist. While delays may be expected and even yield reliable travel times, frustration will affect people's health and mental well-being as well as their daily activities.

CONSTRAINED FUNDS FOR MAINTENANCE

Most funds go to operations, maintenance, and state of good repair, but limited and uncertain sources—including declining gas tax revenue and unpredictable federal support—make prioritization challenging as funding needs continue to increase.

INSUFFICIENT TRUCK PARKING ALONG MAJOR ROUTES

The surge in consumer demand for rapid package delivery has increased freight traffic along major routes, leading to difficulties for truckers to find reliable parking.

ANTIQUATED INFRASTRUCTURE AT UNION STATION LIMITING SERVICE AND CAPACITY

As the region's busiest transit hub, Union Station must upgrade and expand to meet projected ridership on intercity rail and bus, Metrorail, VRE, MARC, and ground transportation driven by population/employment growth regionally and along the Northeast Corridor.

VISUALIZE 2050

Scan the QR code below to visit **Visualize2050.org**:

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