The District of Columbia's Multimodal Long-Range Transportation Plan

Public Review Draft
May 2014
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District Department of Transportation
Policy, Planning & Sustainability Administration
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DDOT Mission
Develop and maintain a cohesive sustainable transportation system that delivers safe, affordable, and convenient ways to move people and goods - while protecting and enhancing the natural, environmental and cultural resources of the District.

DDOT Vision
The District Department of Transportation (DDOT) is committed to achieving an exceptional quality of life in the nation’s capital through more sustainable travel practices, safer streets and outstanding access to goods and services. Central to this vision is improving energy efficiency and modern mobility by providing next generation alternatives to single occupancy driving in the city.

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Prioritizing pedestrians of all ages and abilities will continue to be a high priority for DDOT in the future
Foreword

I. Transportation and People

moveDC is a plan for the future of the city and how its residents, workers, and visitors will move around the city. Throughout the planning process, transportation was a significant focus, but it was not considered in a vacuum. Recognizing the complex nature of the effects of transportation on cities, the process purposefully explored transportation’s role in making the city more livable and prosperous for everyone; contributing to better environmental quality; making neighborhoods more livable and successful; and keeping the District a locally, regionally, and globally competitive place.

At the end of the day, transportation is about moving people—by whatever mode they choose to use for travel. Understanding that the people who use the system often have the best perspective about what the existing system has to offer and what a system of the future could offer, moveDC purposefully sought to expand the public dialogue to a broad base of people in the District. At a human and individual level, the moveDC engagement initiative purposefully connected with groups, agencies, and individuals traditionally not involved in planning and the public discourse, but who could share invaluable stories and ideas.

Recognizing the value of people’s insight to guide and inspire the overall engagement initiative for moveDC, the process set the ambitious goal from its first day—which it ultimately met—to engage a unique one percent of the District’s daytime population (more than 11,000 people). This goal of the process was achieved through major events, three rounds of workshops, webinars, social media, blogging, committee meetings, conversations with special groups, and survey interactions.

II. Our Transportation Future

This document is simultaneously a transportation plan and an investment strategy supporting significant city goals. Like all good plans and strategies, it will need to be updated from time to time—every 5 years is a reasonable expectation. The need for updates is not an acknowledgement of specific flaws of the moveDC Plan, but a recognition that some things will change in the city that no one can anticipate today. If the moveDC Plan is to remain a valuable tool, some level of continuing investment in it is needed.

This document presents a vision and specific recommendations for our transportation future as residents, workers, and visitors of the District of Columbia. The plan comes at a time of significant growth—to more than 900,000 residents and 1,000,000 jobs by 2040, based on forecasts by the District Office of Planning (2013); to more visitors; and to more local, regional, national, and international activity.

The plan is focused on improving transportation conditions in the District for all its residents, workers, and visitors by making strategic investments in its significant networks—transit, bicycle, pedestrian, and vehicles—while also supporting significant District goals related to neighborhood vitality, environmental stewardship, and global competitiveness.
III. Our Vision and Goals
The moveDC vision and goals set a high bar for the District's transportation future. The vision and goals were developed through extensive public engagement and are described in greater detail in Chapter 1.

Vision
The District of Columbia will have a world-class transportation system serving the people who live, work, and visit the city. The transportation system will make the city more livable, sustainable, prosperous, and attractive. It will offer everyone in the District exceptional travel choices. As the transportation system evolves over time, the District will:

- Be more competitive and attractive locally, regionally, nationally, and internationally
- Have safer and more vibrant streets and neighborhoods
- Have cleaner air, streams, and rivers, and be more responsive to climate change
- Accommodate the travel needs of all residents, workers, and visitors regardless of age or ability
- Integrate the District’s transportation system with the region’s transportation network

GOALS
moveDC’s goals and objectives are derived from existing District plans, including Sustainable D.C. and the Strategic Highway Safety Plan, prior DDOT vision and goal statements, and input from the public during the moveDC process.

- **Sustainability and Health:** Achieve 75% of all commute trips in the District by non-auto modes
- **Citywide Accessibility and Mobility:** Maximize system reliability and capacity for moving people and goods
- **Neighborhood Accessibility and Connectivity:** Support neighborhood vitality and economic development
- **Safety and Security:** Achieve zero fatalities and serious injuries on the District transportation network
- **Public Space:** Reinforce Washington, D.C.’s historic landscapes and quality of neighborhood public space
- **Preservation:** Maximize reliability for all District transportation infrastructure by investing in maintenance and asset management
- **Funding and Financing:** Invest in transportation to achieve outcomes within the plan horizon
A TRANSFORMATIVE OUTCOME

At its core, moveDC is a transportation plan, but in actual fact, it is a mechanism to support and contribute to the city’s prosperity and health. Early in the planning process, many voices contributed to identifying the general and specific needs that moveDC would need to address. The following is a brief summary on the ways in which moveDC addresses the broadly expressed needs for transportation in the District today and in the years to come.

- **For residents**, more Capital Bikeshare, faster and more reliable transit, streetcars, more Metrorail, bike lanes and cycle tracks in more places, sidewalks citywide, improved streetscapes, and more efficient traffic operations on streets.

- **For commuters**, more commuter rail, more Metrorail, more and better surface transit, more efficient freeway and major arterial operations through careful management, strategies to reduce downtown congestion, and more regional coordination.

- **For visitors**, an easier to understand and use transportation system, more choices in more places, an even more beautiful city, and even more reasons to not drive, whether people’s trips start from near or far.

- **For business**, support for innovation, streetcars, more travel choices in more places, better freight and delivery experience, management of downtown traffic and highway congestion, better access to and from the District, more reliable transportation system, and sustained investment in the city’s infrastructure.

- **For the environment**, more effective use of the transportation system to improve water and air quality, more walking, bicycling, and transit use, and preservation and enhancement of the natural, cultural, and historic landscape.

- **For the most vulnerable**, safe routes to schools and for seniors, quality travel choices in more places, safer streets for everyone, support and subsidy, more effective local services, and continued opportunity to drive.

- **For a lifetime**, a complete, interconnected, and effective transportation system that allows people at every stage of their life find a place in the city that meets their needs.
IV. Structure of the moveDC Plan

A. MULTIMODAL VISION PLAN
The following chapters lay out the moveDC Plan’s development process, the ideas studied, people involved, needs of today and the future, recommendations for the transportation system, and strategies to implement moveDC. The multimodal vision plan integrates all transportation modes in outlining policy and infrastructure recommendations at a Districtwide scale:

- **Chapter 1: The Long View.** A brief historical perspective on transportation in the District, existing trends in transportation globally, and moveDC’s vision and goals
- **Chapter 2: Growth, Travel Patterns, and Needs.** The forces affecting transportation today and in the future in the District
- **Chapter 3: Exploring the Future.** An overview of the different approaches to serving the travel needs in the District in the future

- **Chapter 4: Policy and Planning Framework.** The recommended plan at a systemwide level
- **Chapter 5: Implementation.** The plan and tools for making the moveDC vision and recommendations a reality

B. MODAL ELEMENTS
Bound separately, the modal elements focus on individual transportation modes and include detailed recommendations for policy, infrastructure, and programming. These elements function as stand-alone modal Master Plans that are integrated with each other.

- **P - Pedestrian.** The plan to invest in pedestrian mobility Districtwide
- **B - Bicycle.** The plan to invest in bicycling Districtwide
- **T - Transit.** The plan to increase transit’s appeal, effectiveness, and role in the District
C. SUPPORT ELEMENTS
Bound together, these support elements focus more on policy and programmatic recommendations that support multimodal mobility and safety.

- Transportation Demand Management. The plan to manage the increase in single-occupant vehicle demand
- Parking and Curbside Resources. Recommendations on maximizing the District’s public parking and curbside resource for everyone’s benefit
- Sustainability & Livability. Recommendations for making streets better for everyone and the environment

D. APPENDICES
The following appendices support the Vision Plan, Modal Elements, and Support Elements.

- Appendix 1.1 – moveDC Performance Metrics
- Appendix 4.1 – moveDC Policy Guide
- Appendix P.1 – Status of 2009 Pedestrian Master Plan (As of December 2013)
- Appendix B.1 – Status of 2005 Bicycle Master Plan (As of December 2013)
CHAPTER 1: The Long View

I. Transportation Shapes the City

The transportation system of the District today is inherited from decisions made decades and centuries ago. The vision for transportation in the District contained within the moveDC Plan and the decisions on transportation that will be made in the years to come will influence the city for generations, much like those of the past have contributed to the city of today. Reviewing the history of the city and how it has been shaped by the transportation system is essential to understand how transportation will continue to influence where we live, work, shop, go to school, and make daily decisions about how to get around.
II. History of the City

In transportation, like many other things, the future is built on the shoulders of the past. Transportation’s influence in shaping the city has changed considerably over time. The following sections briefly summarize past transportation influences in the District.

A. PAST AS PROLOGUE

Like virtually every other human settlement, Washington, D.C., grew up around transportation systems. In 1790, the District of Columbia was created to be the capital of the fledgling United States of America. Georgetown, Alexandria, and Bladensburg were already settled along banks of the Anacostia and Potomac Rivers, but much of the new capital was a blank slate.

Pierre L’Enfant was commissioned to lay out the capital city in 1791. His design created the layout of the City of Washington, which still provides the foundation for the overlapping system of a connected street grid and diagonal axes with grand vistas and open spaces. The presence of the L’Enfant Plan on the National Register of Historic Places is a testament to the enduring value of this original structure of the city.

For more than 100 years, transportation access in the District was by horse or on foot, shaping the city through the construction of footpaths and carriage houses, and also presenting public health and sanitation challenges in the streets. As the capital and the nation grew, settlements extended outward along a series of country roads that led to farmland and country estates. At the turn of the 20th century, developers established numerous independent subdivisions that capitalized on the city’s growing population and increased transportation capabilities—from railroads to the first streetcar lines.

From the first electric streetcar launch in Eckington in 1888 to the completion of Union Station in 1908, rail was the cornerstone of mobility for the city in the early 20th century. Streetcar lines reached out to Brookland and Anacostia and ran up Connecticut Avenue to the bucolic country estates in Chevy Chase, creating nodes of activity along their length. Many of these original streetcar routes are still in service as today’s Metrobus lines.

Seeing the rising positive and negative impact—pedestrian safety, noise, and soot (of coal-powered engines)—of railroads and the expanding growth of the city, the McMillan Commission made a bold proposition to create a modern and elegant multimodal hub for the Capital, while forming or preserving the prized major parks the District enjoys today. As the plan moved to implementation, the tangle of existing rail lines was relocated from the Potomac River plain to clear the way for the National Mall.

The early 1900s were a time of rapid growth and change for the city. The population increased by more than 50 percent in the first 20 years of the new century—rising from 278,000 people in 1900 to more than 437,000 people in 1920. By 1940, the District’s population reached more than 660,000.

Fueled by the easy access offered by the expanding streetcar network, urban neighborhoods sprang up on formerly rural lands. Housing development boomed in Pleasant Plains; on Barry’s Farm, the original homes of what is now Barry Farm1

grew; and Swampoodle’s shantytowns (now NoMa) gave way to both industries and the Uline Arena, bringing the likes of Joe Louis, Malcolm X, and, of course, The Beatles to Tiber Creek’s former floodplain. 2

Another stone was soon laid that would have as much impact on the future of the city as the McMillan Plan of just a decade before. The laying of the “Zero Milestone” just south of the White House in 1919 marked the beginning of the era of the auto. 3

D.C. planners of the early twentieth century saw automobiles as the solution to their urban mobility problems. They didn’t contribute to public health issues like horses and weren’t on fixed routes like the streetcars.

As more cars entered the city, they took up more space—moving and parked. A 1946 article in The Rotarian highlighted parking and transportation challenges, which were not unlike those experienced in the city today. Transportation officials struggled with the trade-offs between meeting the demand for parking and driving with historic preservation and maintaining parks and open space. In many cases, they decided to accommodate the growing demands of the automobile.

Post World War II, cars fast became affordable to everyday people. They appeared to be the perfect solution to serve the mobility needs of a city that expanded far beyond the original Boundary Street (now Florida Avenue). As the auto era dawned, the streetcar age waned. More and more lines changed from trolley to bus service until the last streetcar exited the city in 1962.

In 1956, ten years after World War II ended and the population of the District peaked, two plans were released to deal with the increasing demands for auto movement and storage. A proposed freeway plan and a new zoning ordinance both shaped the future of the District and region.

The same year, based on the belief that accommodating the demands of auto mobility was a prerequisite to a successful city, Harold Lewis published the Lewis Plan of 1956, which recommended a major zoning overhaul for the District of Columbia. Among other things, the Lewis Plan proposed strict requirements for substantial parking in new developments. The Zoning Ordinance of 1958 adopted most of of the Lewis Plan’s recommendations and is still largely the foundation for zoning in the District of Columbia.

While the L’Enfant Plan emphasized a grid of streets capable of sharing the traffic loads, planner Harland Bartholomew proposed the freeway plan for the Washington region that was a dramatic departure from the traditional city. Bartholomew’s Plan channeled auto movement onto a limited network including three circumferential freeways. Bartholomew believed that they would help cluster new development in efficient ways as a means to both contain and strengthen the growing city. 4

Many people were not in agreement with the freeway plan—least of all those people who lived in one of the 200,000 housing units in the region standing in the way of automotive progress, many of them African American. 5 While many Washingtonians are familiar with the Building Height Act of 1910, few know about what amounted to the Roadway Width Act of 1893. That law stated that “no highway right-of-way in the city could be wider than 160 feet (with width of Pennsylvania Avenue).” The eight- and 10-lane planned freeways vastly exceeded the comparatively diminutive 160-foot monumental boulevard and, thus, several freeways were stopped by court order.

6 IBID
**B. THE MODERN CITY**

**Surface and Underground Transit**

The Washington Metropolitan Area Transit Authority (WMATA) emerged as the regional transit agency in 1967, amid the discussion of a freeway plan for the Washington region. The authority was created by an interstate compact, ultimately approved by Congress. After the WMATA Compact was approved by the Maryland General Assembly in 1965, and passed through the Virginia General Assembly and Congress in 1966, WMATA was founded on February 20, 1967. Among its first acts, WMATA laid out the first plan for a regional subway system in 1967 and began a process of consolidation of regional bus lines from private operators.

Ultimately, the battle over planned freeway expansions ended in a compromise. Some sections of the planned system were built; however, many more were not. Meanwhile, $5 billion of planned highway funds went to create what is now a world-class subway system—Metrorail—though ultimately along alignments slightly different from the original concept.

WMATA broke ground for the first of its Metrorail lines in 1969. The first line in the system—Red Line—opened March 27, 1976. This line connected Dupont Circle to Rhode Island Avenue. The 103 miles (166 km) of the original 83-station system were completed on January 13, 2001, with the opening of the Green Line’s segment from Anacostia to Branch Avenue.

While WMATA’s original compact provided plans for regional rail service, transportation demands were growing, and the need for reliable bus service to connect riders to destinations, and to future rail stations, became evident. In response, WMATA acquired four area bus systems in 1973 and consolidated them into the Metrobus system with a unified red, white, and blue brand. Metrobus served as the exclusive source of public transit in the District until Metrorail service began operation in 1976.

**Biking, Walking, Buses, and Streetcars**

The last decade has seen an increase in interest and investment in popular early forms of travel—walking, bicycling, and transit. The first bike lanes in the city were installed in 2000 and in little more than a decade the network has grown exponentially to more than 50 miles. Meanwhile, sidewalks have been improved or built anew in many parts of the District.

The District also has led the way for American bike sharing by launching its first system—SmartBike—in 2008. That system laid the foundation for the successful launch of Capital Bikeshare (CaBi) in 2010, which is the nation’s second largest system (as of January 2014).

These investments have led to some of the highest rates of walking and biking for transportation of any city in the United States. As of 2012, approximately 12 percent of District residents (39,000 people) walked to work and four percent (13,500 people) biked to work each day.

Recognizing the need for additional transit service, the District launched its own branded bus service—Circulator—in 2005. Circulator continues to expand, adding new routes to the initial system. This popular new alternative now has grown to five routes carrying more than 16,000 riders every weekday.

In 2014, further expanding transit options, the District’s modern streetcars will reenter public service in the District for the first time since 1962. The modern streetcar is making a comeback in D.C. and several major U.S. cities. Streetcar has demonstrated an ability to provide efficient, high-quality transit and serve as a catalyst for investments in housing, retail and commercial properties. The first line of the D.C. streetcar is along H Street NE. The District has begun procurement of private-sector partners to design, build, operate, and maintain the 22-mile priority streetcar system.
CHAPTER 1: THE Long ViEw

Multimodal Long Range Transportation Plan

The National Influence

The federal government is inextricably linked to transportation planning, policy, and funding in the District of Columbia. Many major arteries are not directly controlled by the District of Columbia, but by federal agencies. For instance, the grounds around the Capitol are controlled by the Architect of the Capitol and the National Park Service controls roadways in places such as Rock Creek Park. As the capital city, the District’s infrastructure also must accommodate special events, motorcades, and other unique roadway requests.

Planning for the United States Bicentennial Celebration of 1976, coupled with the District’s population declines of the 1960s, ’70s, ’80s, and ’90s, altered the emphasis of policy, planning, services, and infrastructure from a residential focus to a focus on national visitors and suburban commuters.

The threat of global terrorism and increased awareness of homeland security in the late 1990s and early 2000s again altered transportation infrastructure of D.C. Pennsylvania Avenue—a critical east-west connector in downtown—was ordered closed to vehicular traffic by President Clinton in May 1995. After the events of September 11, 2001, sidewalks surrounding many government buildings changed. In the interest of security and hardening perimeters of federal agencies, some street connections have been restricted or closed, altering travel patterns for pedestrians, drivers, and bicyclists.

E Street NW, another important downtown connection through the White House grounds, remains closed across the Ellipse due to concerns about national security. First Street NW/SW and NE/SE around the Capitol have been closed to through-vehicular traffic. Retractable barriers have been installed on Independence and Constitution Avenues to create vehicle checkpoints. Several streets across the District are closed or constrained in their use. While some streets have been restored as security upgrades to buildings and security checkpoints are upgraded, those that remain closed create circulation and planning challenges for all modes of travel.

The federal government also remains an important and large employer and one that supports the multimodal transportation system in the District. Federal transit benefits support the region's high transit ridership and federal location and parking standards integrate federal agencies with the District's multimodal transportation improvements. As the federal workforce continues to evolve, maintaining these connections will be important for the District going forward as well.
III. The Way Ahead

The history of transportation in the District has been one of challenges and opportunities. Planners of each era had their own dilemmas to face. City builders of the 1800s faced “manure in the streets, horse carcasses clogging the roads, and frequent biting and trampling.” At the onset of the 1900s, electrification promised new ways to allow people to travel farther faster. At the same time, the proliferation of trolleys troubled planners who saw their tangle of wires as visual pollution.

The 21st century yields rising automobile congestion, rapidly rising travel costs, and concerns about rising carbon emissions. The most recent stand-alone citywide transportation plan—1997 Transportation Plan for the District of Columbia—called for the expansion of multimodal options, many of which have now come to fruition. Since that time, the District has experienced rapid growth and the expansion of multimodal options. The population and employment growth during the past 17 years have strained the transportation system, even as maintenance needs continue to grow.

To meet these and other challenges, the District of Columbia requires strategic investment and a spirit of innovation. moveDC builds from the District’s history to address existing strengths and challenges and outline a path forward for the future.

A. TODAY’S GROWING CITY
After a long period of decreasing population, the District is again growing, having added nearly 30,000 people between 2000 and 2010 and by approximately 1,100 people each month since 2013. Figure 1.1 shows a historic summary of the population of D.C. since 1900.

B. BUILDING FROM THE PRESENT
The District of Columbia’s transportation past is a strong foundation for future investments. The street network is mostly interconnected. Transit is largely clean, comfortable, and convenient. Many parts of the city have a diverse land use mix, which puts many amenities within easy reach of residents. Most residents, workers, and visitors have the option to walk, bike, ride, or drive depending on their needs, moods, and abilities. These factors combine to make the city among the top in the nation in ratings of walkability, bikeability, and transit access. Beyond the summary below, more details on the strengths and weaknesses of each mode are provided in the modal chapters contained within this plan.

Strengths
The city enjoys a community culture that values choice. Residents consistently have supported investments in a diverse transportation system. Although individuals may rely on just a single mode—such as driving—the general city populace has supported investments in facilities, programs, infrastructure, and services for all travel modes.

The transportation system provides choice, convenience, and reliability to support a variety of households and new market activity. The network of redundant routes forming the city’s grid and angled avenues provide flexibility and resiliency as incidents occur or needs and demands change. Figure 1.2 shows recent changes in the way District residents travel to work.

The District’s transportation system also adds to a competitive advantage in attracting and retaining residents, as residents are able to choose how much transportation they need and what they spend on transportation. In the most recent recession,
the city grew while other places declined. This is attributable to many things, not the least of which is that its residents, workers, and businesses had the ability to be flexible and adapt to changing economic conditions through their transportation choices.

The streets of the city form a linear park system and the many street trees cool the city and clean its air and water. The District’s active transportation networks—sidewalks, bike lanes, and many trails—offer people opportunities for physical exercise, many times simply through running the errands of daily life. The abundance of non-motorized and transit options reduce the number of auto trips that would otherwise need to be taken. When auto trips are required, the city not only accommodates privately-owned autos but also offers different options for the use of shared autos by the week, day, hour, or minute, depending on the need.

**Challenges**

Transportation in the District is far from perfect, not unlike any other major city. In many cases, past planning has resulted in a handful of streets being called on to simultaneously accommodate vehicular traffic, bicycles, trucks, and transit, meaning that priority for any mode is difficult. At the same time, these streets are evacuation routes and are the planned corridors for economic development. Ultimately, the city’s transportation plan needs to make choices between these demands, while retaining overall choices in mobility.

The physical legacy of the post-WWII era focus on orienting transportation system operations to serve auto-commuter needs is still evident today. Travel from suburb to downtown is frequently quicker and easier than getting from neighborhood to neighborhood within the city.

Many of the District’s streets and transit services experience a significant peak in use during morning and evening rush hours. Despite the generally large size of streets and some major transit infrastructure, when elements of these systems fail, demand overflows onto neighborhood streets and to services not designed to carry peak demand. The overflow creates impacts that affect people’s travel quality and reliability and also residents’ quality of life.

L’Enfant’s plan overlaid a series of diagonal avenues over a regular grid of streets. While his vision was to create important and vibrant civic spaces where these two layers intersected and reduce travel distances between city communities, he also succeeded in creating large, complex, and confounding intersections. These intersections challenge efficient roadway operations and have daunting distances pedestrians must cross.

Early in the city’s history, the Potomac and Anacostia Rivers linked the city to the fledgling nation. Today, these rivers, Rock Creek Park, major natural features, and institutional campuses divide the city and are challenges to connectivity between neighborhoods.

In many locations, the continuous grid laid out by both L’Enfant and McMillan is broken. Among other impacts, missing local street connections can create circuitous travel for people and goods, and isolate neighbors and neighborhoods.

While the city’s pedestrian and bicycle network is expanding, it is still incomplete. Gaps in the sidewalk system force pedestrians—including children, seniors, and the disabled—into the street at some locations. Many bicycle routes are suitable for the sturdy and experienced, but unusable for the young or timid.
In the District, many lower income communities struggle with existing transit fee structures that do not facilitate transfers between bus and rail and charge a higher fee for more efficient services. Low-income travelers who tend to be less able to absorb this additional financial cost often have to make the choice to pay a time penalty and in turn a lower transit fare instead of paying more for a more efficient trip that would save time.

People in areas of the city that have few fresh food options or high performing schools must travel out of their communities to meet these daily needs, sometimes making trips not required in other communities. Shared-vehicle systems like Capital Bikeshare and the many carsharing systems require a credit card in order to join, making them harder to access to those without a bank account or with poor credit.

The District has an aging transportation system. Many streets have not been rebuilt in the past half century and many more are overdue for major maintenance. The Metrorail system and dozens of bridges require major improvements and investment. Traffic signal and lighting systems are in need of modernization. Currently, funding is stretched to ensure a state of good repair for the existing system. Meanwhile, the transportation system needs to grow and change to meet existing and anticipated demand.
IV. Developing a Shared Vision for the Future

Current forecasts for the District—prepared in 2013 by the District of Columbia Office of Planning—suggest that the city will grow to nearly 900,000 people and have more than 1,000,000 jobs by 2040. Meanwhile, the region surrounding the District will grow and change significantly. These forecasts are shown in Table 1.1.

This growth will create more activity in congested areas and bring energy into neighborhoods that could benefit from investment. Meanwhile, the many programs, policies, and services already planned will begin to transform the city’s transportation system, but will not be enough to help the city reach its full potential and preserve and enhance people’s mobility. Without sustained investment in all facets of transportation, the District’s competitiveness could be affected by the inconvenience and economic loss of congestion, lack of sufficient transportation choice, and system reliability. Choosing not to invest in the District’s future is not an option. By the numbers, without sustained investment, the District’s future (2040) transportation system will face:

- **More congestion on District streets.** Vehicular delay would increase by nearly 50 percent from existing (2014) levels. This would translate to longer peak travel periods, more widespread and severe congestion on major roadways, more non-local traffic pressure on neighborhood streets, reduced mobility in growing parts of the city, and more difficult access to the city from the region.
- **Transit crowding and congestion.** Forecasts indicate that transit systems within the District would need to accommodate more than 70,000 additional daily riders and those crossing the border with surrounding jurisdictions would need to carry nearly 130,000 additional daily riders. Metrorail and other critical transit services would struggle to provide a comfortable and reliable travel experience for their users.
- **Unaccommodated bicycle demand.** Forecasts for walking and bicycling indicate that nearly 250,000 more walking and bicycling trips will be made within the District on a daily basis in 2040. An additional 29,000 bike and walk trips will be made between the District and neighboring places. The District has already invested in and continues to invest in a robust pedestrian and bicycle network. Without further investment, opportunity may be lost and many would-be walkers and bicyclists could choose to travel by another, more costly (to the District) travel mode.

### Table 1.1: District and Regional Population and Employment Summary

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>602,000</td>
<td>897,000</td>
</tr>
<tr>
<td>Washington metropolitan area</td>
<td>6,626,000</td>
<td>8,661,000</td>
</tr>
</tbody>
</table>

Sources: DC – District of Columbia Office of Planning; Region - MWCOG Approved 8.2 Forecasts
A. moveDC

From the beginning of the moveDC planning process, the development of the District’s transportation plan was about more than transportation. The process to develop the moveDC Plan reflects the broader understanding of transportation's effect on the city and the life of its residents, workers, and visitors. The following briefly summarize the sources of information and process used in the development of moveDC’s vision, goals, and performance measures.

Exchanging Ideas and Inspiration

To expand the conversation about the moveDC Plan and immediately involve the community in its development, moveDC hosted a community event to kick off the planning process on February 9, 2013, at the Martin Luther King, Jr. Memorial Library. The Idea Exchange was attended by more than 300 people who shared ideas, perspectives, wants, needs, hopes, and visions for the future. The outcome of the event provided much of the basis for the initial development of moveDC’s goals and vision, in addition to offering insight into existing issues and future solutions.

Perspectives from city leaders, in combination with participant input at the activities and the panel discussion, were significant and informative. Key themes arising out of the Idea Exchange included:

- Transportation’s broad effect on many facets of life in the District
- The need to make efficient use of existing transportation resources
- Bicycling’s critical role in a complete transportation system
- Critical nature of prioritizing pedestrian accommodation and safety
- The need to balance accommodation of residents and commuters
- moveDC’s critical role in meeting the SustainableDC goal of 75% of work trips by non-auto means
- Challenge for 2013’s transportation system to meet the growing city’s needs
- Difficulty in maintaining affordability as the transportation system matures

Building the Vision

Development of moveDC’s vision continued during the first round of workshops—Ideas that Build—in March and April 2013. During this round of workshops, moveDC’s draft vision became an activity for public input. Figure 1.3 is an image of the many comments people provided on moveDC’s draft vision statement.
Looking Toward Peers

Much like we can learn about how to move forward by studying the lessons of the past and listening to the perspectives of existing residents, workers, and visitors, we can benefit from looking toward peer cities. Washington, D.C. is an international city and world capital. moveDC looked to transportation plans of noteworthy global peers—New York City, New York, USA; London, England; Vancouver, BC, Canada; Stockholm, Sweden; Tokyo, Japan; Copenhagen, Denmark; and Melbourne, Australia; in addition to local and regional plans—for insight on vision and goals.

The moveDC planning process reviewed the transportation and comprehensive plans of New York City, London, and Vancouver in detail. The moveDC planning process also completed a high-level review of planning initiatives in Stockholm, Tokyo, Melbourne, and Copenhagen. The planning team desired to review plans from other major cities such as Paris, France; Berlin, Germany; and Hong Kong; however, English-language versions were not available for review. A brief summary of the substantive findings from these plans is below.

➔ New York City, New York, USA
- Passing legislation about the desired outcomes helped to institutionalize planning efforts beyond the then current administration. Legislation was passed to codify PlaNYC goals into the city’s policy.
- Designating funding made for an action-oriented plan: PlaNYC included $199 million for projects in the city’s 2008 budget and $1.6 billion in the 10-year capital plan.
- Quantifying goals, targets, and objectives is critical to measuring, evaluating, and reporting progress.
- Major transportation investments offer opportunities to catalyze private development and improve the viability of commercial real estate.
- Collaborating with a coalition of advocacy organizations helped to push the plan and build support.
- Employing significant travel demand management measures, such as road user charging, influenced mode shift supportive of overall plan goals and targets.
- Providing funding for planning and project implementation in boroughs allowed Transport for London (TfL) to ensure transport facilities and services would be safe, integrated, efficient, economical, and consistent with overall plan goals.

➔ Vancouver, BC, Canada
- Using clear indicators to help determine investment priorities provided a data-based backing to communicate the rationale and effectiveness of investments.
- Low-cost pilot projects allowed agencies to test and refine innovative projects and programs before replicating or committing significant resources.
- Events, such as Cyclovia car-free street events, provided short-term opportunities and encouragement for active transportation and mode shift.
- Developing tools, such as a “cycling comfort index” to evaluate Bicycle Level of Service (BLOS), allowed for adjustment to plan priorities and investments.

➔ London, England
- A coordinated and integrated planning approach to deliver the Mayor’s Transport Strategy (MTS), London Plan, and Economic Development Plan simultaneously helped move all of the city’s goals together at once.
- Building flexibility into overall strategy allowed boroughs (local units of government) to choose local priorities that fit within the overall strategy.
- Identifying funding for initiatives sped implementation.
Despite an affluent population with a high rate of vehicle ownership, Stockholm has a high mode share for public transit, bicycling, and walking. A combination of plans, policies, and projects have led to high-quality transit services; high auto-related taxes and fees, parking charges, and the center city congestion charge combine to make driving costly compared to non-auto modes of transport.

### Tokyo, Japan
- Tokyo’s goals and vision includes a combination of policies and recommendations to address disaster resistance, energy efficiency, and international competitiveness.
- Three-year action plans are formulated to ensure the viability of the measures taken to achieve the vision of Tokyo in 2020. The progress and results of the measures are checked regularly, with the plans revised every year to accurately and promptly reflect changes in the social climate.

### Melbourne, Australia
- The plan is guided by five principles: a city for people, a creative city, a prosperous city, an eco-city, and a connected city.
- The City of Melbourne took a leadership role in prioritizing pedestrian infrastructure through multiple policies and strategies that encouraged street furniture and art, and required human-scale buildings and frontages.
- Key directions of the plan’s transport strategy included integrating land use and transportation planning, go anywhere, anytime transit, and support for walking and cycling as dominant modes of transport.

### Copenhagen, Denmark
- The focus of Eco-Metropolis: Our Vision for Copenhagen 2015 is encapsulated in four main goals: making Copenhagen the world’s best cycling city; making it a “climate capital,” providing an accessible, first-class waterfront and parks; and ensuring a healthy, pleasant environment.
- National spatial planning policies in Copenhagen have encouraged and required mixed-use and dense development near transit; notably requiring that all significant new commercial development be located within a 600-meter walk of a rail station.
B. MEASURING PERFORMANCE

Performance measurement, how to do it, and what to measure were topics of discussion from the earliest stages of moveDC through its completion. Understanding the complexities of the District’s transportation needs in combination with agency, regulatory, political, and public climates, the moveDC Plan was developed to be defensible and implementable from day one.

Performance criteria were used at different stages of the moveDC planning process, from the development of alternatives and the recommended plan through the implementation strategy. The following briefly summarizes information and sources used in the development of performance measures for moveDC.

United States Department of Transportation
The United States Department of Transportation (USDOT) oversees the implementation of the Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012. MAP-21 is the federal government’s transportation authorization bill and funds surface transportation programs. MAP-21 guides local transportation policy by setting the following performance-based planning factors:

- Support economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
- Increase the safety of the transportation system for all users
- Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all users
- Increase accessibility and mobility of people and freight
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system

Metropolitan Washington Council of Governments
The Metropolitan Washington Council of Government’s Transportation Planning Board (MWCOG TPB) is the federally designated metropolitan planning organization (MPO) for the region. TPB prepares plans and programs required by the federal government to receive federal-aid transportation funds. TPB’s vision lays out eight broad goals to guide the region’s transportation investments into the 21st century. The Vision was unanimously approved in October 1998 by the TPB after an extensive public outreach effort that lasted three years. The goals outlined in TPB’s vision for the region are:

- Provide reasonable access at reasonable cost to everyone in the region
- Develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy throughout the entire region including a healthy regional core and dynamic regional activity centers with a mix of jobs, housing, and services in a walkable environment
- Give priority to management, performance, maintenance, and safety of all modes and facilities
- Use the best available technology to maximize system effectiveness
- Plan and develop a transportation system that enhances and protects the region’s natural environmental quality, cultural and historic resources, and communities
- Achieve better interjurisdictional coordination of transportation and land use planning
- Achieve an enhanced funding mechanism(s) for regional and local transportation system priorities
that cannot be implemented with existing and forecasted federal, state, and local funding
• Support options for international and interregional travel and commerce

**District Plans**
The **moveDC** vision, goals, and performance measures build from District of Columbia agency plans and various D.C. stakeholder plans. They include, but are not limited to:

• 1997 Transportation Plan for the District of Columbia
• District of Columbia Bicycle Master Plan (2005)
• District of Columbia Comprehensive Plan for the National Capital (2006)
• District of Columbia Pedestrian Master Plan (2009)
• D.C.’s Transit Future System Plan (2010)
• NCPC’s Capital Space (2010)
• DDOT’s Action Agenda (2010)
• Office of the Mayor’s 5-Year Economic Development Strategy (2012)
• Office of the Mayor’s One City Action Plan (2012)
• A Vision for a Sustainable D.C. (2012)
• Architect of the Capitol’s Strategic Vision & Five Year Focus (2012)

**V. Our Vision and Goals**
The **moveDC** vision and goals set a high bar for the District’s transportation future. The following presents **moveDC’s** vision and goals. The plan’s performance metrics are summarized in **Appendix 1.1**.
A. Vision
The District of Columbia will have a world-class transportation system serving the people who live, work, and visit the city. The transportation system will make the city more livable, sustainable, prosperous, and attractive. It will offer everyone in the District exceptional travel choices. As the transportation system evolves over time, the District will:

- Be more competitive and attractive locally, regionally, nationally, and internationally
- Have safer and more vibrant streets and neighborhoods
- Have cleaner air, streams, and rivers, and be more responsive to climate change
- Accommodate the travel needs of all residents, workers, and visitors regardless of age or ability
- Integrate the District’s transportation system with the region’s transportation network

B. GOALS
moveDC’s goals and objectives are derived from existing District plans, including Sustainable D.C. and the Strategic Highway Safety Plan, prior DDOT vision and goal statements, and input from the public during the moveDC process.

➤ Sustainability and Health: Achieve 75% of all commute trips in the District by non-auto modes
- Increase non-auto mode split
- Increase access to parks and green space
- Encourage active transportation for health benefits
- Reduce air and water quality impacts of transportation
- Prepare the transportation system for changing environmental and climatological conditions
- Increase transportation availability to economically challenged or targeted redevelopment areas

➤ Safety and Security: Achieve zero fatalities and serious injuries on the District transportation network
- Improve safety for all users
- Improve redundancy of transportation networks to handle emergencies
- Expand sidewalk network
- Maintain ability to evacuate the District in case of emergency
- Preserve security of key functions without impacting the transportation system

➤ Citywide Accessibility and Mobility: Maximize system reliability and capacity for moving people and goods
- Increase the person-carrying capacity of the transportation system
- Improve system reliability
- Reduce financial barriers to the lowest-income transportation system users
- Accommodate the movement and management of freight and goods
- Integrate the District’s transportation system with the region’s transportation network
- Increase transportation availability to economically challenged or targeted redevelopment areas

➤ Public Space: Reinforce Washington, D.C.’s historic landscapes and quality of neighborhood public space
- Protect and enhance important corridors and urban landscapes
- Make streets functional, beautiful, and walkable
- Increase tree coverage

➤ Neighborhood Accessibility and Connectivity: Support neighborhood vitality and economic development
- Increase the coverage of all modal networks throughout the District
- Increase the number of transportation choices for travel between city neighborhoods
- Increase transportation availability to population centers and jobs, schools, amenities, and services

➤ Preservation: Maximize reliability for all District transportation infrastructure by investing in maintenance and asset management

➤ Funding and Financing: Invest in transportation to achieve outcomes within the plan horizon
An investment in the District’s future, the 11th Street Bridge
The District of Columbia's Comprehensive Plan, Generalized Policy Map (excerpted on this page) shows what the future could hold for the city from a land use policy perspective.

Map source: District of Columbia Office of Planning, January 2012
CHAPTER 2: Growth, Travel Patterns, and Needs

I. Growth

Between 2010 and 2013, the District population increased by more than 1,100 people each month and employment grew by thousands of jobs. The growth experienced by the city in a little more than a decade is only the beginning of what is forecast to come in D.C. and in the region.

The increase in activity in the city accompanying anticipated growth will add to demand for transportation. To meet the needs of tomorrow, the city’s transportation system and its travelers will need to continue to be flexible and adaptable.

To understand the context in which the plan needed to be developed, moveDC explored current and forecast (2040) population and employment conditions in the city and region, current travel trends, and technology’s evolving influence in transportation and mobility. moveDC also reached out to people through a research survey to understand their likes, dislikes, attitudes, and behaviors related to transportation decision-making and future mobility solutions.
II. Forecasting Residents and Jobs

The Metropolitan Washington Council of Governments' (MWCOG) Cooperative Forecasting program provides regularly updated population, household, and employment forecasts for use in MWCOG and local government and state planning activities. The term “employment” used throughout this document refers to jobs, not the status of population in terms of whether they are employed or not. MWCOG’s cooperative forecasts are methodically coordinated among member jurisdictions to improve the regional reliability and accuracy in planning applications.

Each series of forecasts—prepared for a period of 20 to 30 years—constitutes a Round in MWCOG terminology. When the moveDC process was initiated, the most current adopted forecasts were Round 8.2, which were the same as Round 8.1 for the District. The Round 8.2 forecast horizon year was 2040. As MWCOG population and employment forecasts are described from this point forward in the document, they are simply referred to “approved MWCOG forecasts.”

The District of Columbia’s Office of Planning (OP)—which also serves as the state data center for demographic analysis and forecasting—is responsible for preparing District population and employment forecasts. They provide these forecasts to MWCOG as the District’s contribution to the region’s cooperative forecasts. As OP prepared forecasts to include in Round 8.3 cooperative forecasts, they sought to account for anticipated significantly changing employment and population conditions in the District. As draft OP population and employment forecasts are described from this point forward in moveDC, they are referred to as “draft OP forecasts.”

What is clear from these projections at the District and regional level is that doing nothing is not an option. Without investment in the transportation system, the current ways of getting around the region will become untenable. Congestion on the District’s roadways and transit corridors will make travel difficult at peak times and will impact the quality of life in neighborhoods. More multimodal traffic on all streets will impact the safety of all users, and some of the economic development centers in the District will not be able to function, possibly pushing that growth out into the region and thereby further burdening the District’s transportation system. moveDC is a plan developed in response to these factors, as well as our understanding and user perceptions of the current system.

Role of Forecasts

Population and employment forecasts are one of many tools used to provide context to planning process and support regional tools for transportation demand forecast development. The region’s population and employment forecasts are the regionally-accepted standard for use in planning applications. They are continually updated and evolve as conditions in the region change.
A. POPULATION

In 2010, the District’s population eclipsed 600,000 people, marking the first decade of population growth in D.C. in a half-century. Between 2000 and 2010, the District’s population grew by about 30,000 people, or 0.5 percent annually. Between 2010 and 2012, the rate of change of the District’s population increased significantly. During this period, the city grew at a rate of approximately 2.5 percent annually or by about 1,100 people each month.

Current MWCOG forecasts indicate that the District’s population will increase by about 170,000 people between 2010 and 2040 (about 0.8 percent annual growth). This will result in the District reaching a population of approximately 770,000 people by 2040.

Draft OP forecasts anticipate a higher rate of growth during this same period. These forecasts indicate that the District will reach a population of nearly 900,000 people by 2040 (about 1.3 percent annual growth).

Figure 2.1 summarizes historic and projected population. Figure 2.2 shows change in population density from 2010 to 2040 based on approved MWCOG forecasts.
FIGURE 2.2: CHANGE IN POPULATION DENSITY (2010 – 2040)

Growth is expected to occur along the 16th Street and Georgia Avenue corridors in places like Mt. Vernon, Shaw, Columbia Heights, Petworth, and Walter Reed. Other pockets of growth include M Street SE/Navy Yard, Anacostia, and the St. Elizabeths campus.
B. EMPLOYMENT

There were approximately 785,000 jobs in the District in 2010. Between 2005 and 2010, the District’s employment grew by about 36,000 jobs, or 0.9 percent annually.

Based on MWCOG forecasts, the District’s employment is expected to increase by nearly 200,000 jobs from 2010 to 2040 (about 0.8 percent annual growth). This will result in a District employment of approximately 980,000 jobs. Draft OP forecasts anticipate that the District’s employment will increase more dramatically to approximately 1,000,000 jobs by 2040.

Figure 2.3 shows historic and projected employment in the District. Figure 2.5 shows change in employment density from 2010 to 2040 based on approved MWCOG forecasts.
C. ACTIVITY

Often, when population and employment are viewed separately they unintentionally exclude areas with significant density that is the result of mixing of population and employment centers. To better identify and understand the scale of these areas, particularly in communities with highly mixed land uses, population and employment are combined and evaluated as “activity.”

Figure 2.4 shows a summary of population, employment, and activity in the District in five-year intervals based on approved MWCOG forecasts. Figure 2.6 shows 2010 activity density and Figure 2.7 shows 2040 activity density based on approved MWCOG forecasts.

D. REGIONAL GROWTH

Like the District, the Washington metropolitan area is forecast to grow in the coming decades. Table 2.1 is a summary of existing (2010) and future (2040) forecasts for the District and Washington metropolitan area. The region is expected to add two million residents and 1.6 million jobs by 2040.

Continued transportation investment in the region is critical to sustainably accommodating this growth and maintaining the competitiveness of the District and the region nationally and internationally. moveDC identifies many places where the District will need to coordinate with regional partners in large-scale and region-serving investments such as commuter rail, Metrorail, and roadway management.

Table 2.1: District and Regional Population and Employment Summary

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>602,000</td>
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</tr>
<tr>
<td>Washington metropolitan area</td>
<td>6,626,000</td>
<td>8,661,000</td>
</tr>
</tbody>
</table>

Sources: D.C. - District of Columbia Office of Planning; Region - MWCOG Approved 8.2 Forecasts
FIGURE 2.5: CHANGE IN EMPLOYMENT DENSITY (2010 – 2040)
Growth is expected to occur in NoMA and around Union Station, along M Street SE, Buzzard Point, and the St. Elizabeths campus.
FIGURE 2.6: 2010 ACTIVITY DENSITY

In the District, areas with the highest activities densities have more than 250 jobs and people per acre. These densities are located in the Central Employment Area and near Union Station.
FIGURE 2.7: 2040 ACTIVITY DENSITY
Growth is expected to occur in NoMA, at Judiciary Square, and along M Street SE.
III. Travel Patterns and Investments

A. COMMUTING

Nearly three quarters of the District’s workforce comes from outside D.C. Approximately one third of employed District residents work outside of the District. As the future transportation system is planned, the needs of both groups must be considered. Figures 2.8 and 2.9 show commuting patterns for District residents and District workers, respectively.

Figure 2.8: Where District Residents Work
About 65 percent of employed District residents work within the District.

Figure 2.9: Where District Workers Live
Nearly 75 percent of the District’s workforce comes from outside D.C.

Travel in D.C. is Evolving

- **More people are taking transit.** The transit mode share increased 5.1 percent between 2000 and 2010.
- **Biking is increasingly popular.** The bike mode share for D.C. is currently about five times the regional average. Much of the surge in bicycle use in D.C. is attributable to recent investments in facilities and an increase in advocacy and awareness.
- **More people are working from home.** Increased teleworking options in addition to long and unpredictable congestion are discouraging people from making long commutes.
- **Car ownership is decreasing.** The District has, by far, the highest percentage of no-vehicle households in the region.
Commuter travel mode varies widely depending on the worker’s place of residence. The following figures show mode of travel to work in the Washington metropolitan area, the District, and a walk-friendly neighborhood in D.C.

In 2012, there were approximately 1.3 jobs per District resident. Ideally, as the District’s population grows, jobs in D.C. could increasingly be filled by District residents. As more District residents work in the city, commutes will be shorter and have less impact on the transportation network.

**B. PERSONAL TRIPS**

Work trips are important, but they are not the only trips made in D.C. Other significant types of trips that affect the operation of the District’s transportation system include school, sightseeing, recreation, religious service, shopping, dining, and entertainment trips.

Visitors (non-worker) have a significant benefit to the District, but a tremendous impact on the city’s transportation system. Every indication suggests that the number of people visiting the District will increase in the future. A record number of people (approximately 17.9 million) visited the District in 2011.

**Impact of Job Location**
The District is one of the largest importers of workers for its employers in the nation. The city’s daytime population approximately doubles with the influx of commuters and visitors to the city.

**Visitor Statistics**

17.9 million

- For every one DC resident, there were 29 visitors
- Every 235 visitors creates a new job
- Tourists spent $473 million on transportation (not including airfare)

2 Destination D.C., 2011
Figure 2.10: 2040 Daily Person Trip Flows for District to District Trips

Source: Districtwide Travel Demand Model, 2013
C. TRIP FLOW

General travel patterns in the greater D.C. area were evaluated to better understand primary desire lines for travel within, to, from, and through the District. Districtwide Travel Demand Model data for 2010 and 2040 was evaluated on an area-wide basis—including District neighborhoods and major corridors outside of the District—during moveDC to develop the trip flow summary.

Figures 2.10 and 2.11 show a summary of daily person trip travel flows between zones within the District and the region. On each figure, the scale of the lines between zones reflects the magnitude of trips between zones. The lines are not indicative of a specific travel path; instead, they show the magnitude of desire between point of origin and destination.

Figure 2.11: 2040 Daily Person Trip Flows for Regional Trips
Source: Districtwide Travel Demand Model, 2013
D. TRAVEL DEMAND

Vehicular Demand

Growth in the District and region will increase the overall number of trips made within, to, from, and through the District. Without sustained investment to diversify the District’s transportation system, the number of vehicular trips will increase significantly as will vehicular delay. **Table 2.2** shows a summary of daily trips under existing (2010) modeled and future (2040) baseline conditions. **Table 2.3** shows mode share data for the same conditions.

**Table 2.2: Existing Model (2010) and Future Baseline (2040) Daily Trips**

<table>
<thead>
<tr>
<th>Travel Mode</th>
<th>District-District Trips</th>
<th></th>
<th>To/From District Trips</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model Base Year</td>
<td>Future Baseline</td>
<td>Model Base Year</td>
<td>Future Baseline</td>
</tr>
<tr>
<td>Motorized (drive)</td>
<td>639,000</td>
<td>756,000</td>
<td>1,305,000</td>
<td>1,480,000</td>
</tr>
<tr>
<td>Transit</td>
<td>314,000</td>
<td>384,000</td>
<td>486,000</td>
<td>615,000</td>
</tr>
<tr>
<td>Non-Motorized (walk and bike)</td>
<td>450,000</td>
<td>698,000</td>
<td>200,000</td>
<td>229,000</td>
</tr>
</tbody>
</table>

Notes:
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit

**Table 2.3: Existing Model (2010) and Future Baseline (2040) Mode Share**

<table>
<thead>
<tr>
<th>Travel Mode</th>
<th>District-District Trips</th>
<th></th>
<th>To/From District Trips</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model Base Year</td>
<td>Future Baseline</td>
<td>Model Base Year</td>
<td>Future Baseline</td>
</tr>
<tr>
<td>Motorized (drive)</td>
<td>45.5%</td>
<td>41.1%</td>
<td>65.6%</td>
<td>64.7%</td>
</tr>
<tr>
<td>Transit</td>
<td>22.4%</td>
<td>20.9%</td>
<td>24.4%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Non-Motorized (walk and bike)</td>
<td>32.1%</td>
<td>38.0%</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

Notes:
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit
3. Columns may not total 100% due to rounding
4. Approx. average auto occupancy for District trips is 1.38 in the base year, 1.41 in the future baseline
5. Approx. average auto occupancy for to/from District trips is 1.26 in the base year, 1.31 in the future baseline

**Table 2.4** shows a summary of modeled existing (2010) and future (2040) baseline vehicular system performance data. As shown in this table, in the limited investment scenario that the future baseline condition represents, vehicular delay could increase by approximately 40 percent within D.C., while the number of vehicle miles traveled only increases by 14 percent.
Evaluating volume to capacity (V/C) ratios is one of the ways to understand where congestion may exist on streets under existing and future traffic conditions. In theory, when a V/C ratio exceeds 1.0, it means that a roadway is over capacity—there is more demand (traffic) than capacity (space for that traffic).

Figures 2.12 and 2.13 show modeled existing (2010) and future (2040) roadway conditions during the p.m. peak hour, based on outputs from the Districtwide Travel Demand Model. The red and blue colors shown in the maps indicate locations where congestion is likely to be present. Lighter colors (green and orange) are areas where congestion is less likely to be present.

As shown in the figures, the District’s freeways and many major arterials would be as or more congested than they are under existing (2010) modeled conditions in 2040. The modeled results also may be understating the actual level of congestion that could existing in the network due to the fact

Table 2.4: Existing Model (2010) and Future Baseline (2040) Vehicular System Performance

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Miles Traveled (VMT)</td>
<td>9.13 million</td>
<td>10.45 million</td>
</tr>
<tr>
<td>Vehicle Hours Traveled (VHT)</td>
<td>335,000</td>
<td>389,000</td>
</tr>
<tr>
<td>Delay (Hours)</td>
<td>21,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Note: These values are for the District of Columbia only.
that models do not show cumulative effects (queueing) of major network congestion.

From a system planning perspective, only investing in the projects that DDOT is already committed to funding will not address the city’s mobility needs or move the District toward its ultimate goals. Additional investments will be needed to remedy existing network deficiencies and improve mobility citywide. A coordinated plan for investment will be essential in support of the city’s continued growth.

**Transit Demand**

The District’s transit network—made up of rail, buses, ferries, and shared bicycles—carries approximately 42 percent of the District’s commute trips every weekday. Components of the transit network already are acutely crowded during peak hours and are reaching capacity. This includes Metrorail stations in Downtown (Union Station, Metro Center, Farragut North, Farragut West, and Gallery Place-Chinatown) and bus services operating along the Pennsylvania Avenue SE, 16th Street NW, Georgia Avenue NW/7th Street NW, Benning Road NE/H Street NE, 14th Street NW, and Anacostia/Congress Heights corridors.

By 2040, 170,000 more residents and 200,000 more jobs will locate in the District, generating more than two million new trips each day—200,000 of which are projected to be on transit crossing the District’s border from neighboring Maryland and Virginia.

With elements of the transit system already at, or approaching capacity, continuing to accommodate a share of trips by transit equal to existing will require investments in the transit network. **Figure 2.14** shows projected (2040) crowding on the Metrorail network with 2013 regional constrained long-range transportation plan projects and Metro 2025 projects.
E. REGIONAL TRANSPORTATION INVESTMENT

The District is not alone in planning for multimodal transportation system improvements. MWCOG maintains the National Capital Region’s Financially Constrained Long-Range Transportation Plan (CLRP). Supplementing the region’s most recent CLRP, MWCOG adopted the Regional Transportation Priorities Plan (RTPP) in 2014.

The CLRP identifies all regionally significant transportation projects and programs that are planned in the Washington metropolitan area over the next 35 years. The CLRP is updated annually. Its projects and programs are developed cooperatively by the region’s jurisdictional bodies and transportation agencies represented on the National Capital Region Transportation Planning Board (TPB).

More than 750 projects are included in the 2013 CLRP. These projects range from relatively straightforward and modest-scale projects to billion-dollar highway and transit projects. The CLRP informs the Transportation Improvement Program (TIP), a six-year financial program that describes the schedule for obligating federal funds to state and local projects. The TIP also includes information for all modes of transportation and is updated annually.

The TIP represents intent to implement specific projects and the anticipated flow of funding. Projects in the TIP’s first year are eligible to receive federal funding. Figure 2.15 is a summary of projects in the 2013 CLRP.

The purpose of the RTPP is to identify transportation strategies that best promote the TPB’s goals for economic opportunity, transportation choices, system safety and efficiency, quality of life, and environmental stewardship. The RTPP, informed by regional public opinion, identifies strategies that the region agrees are the top priorities for addressing the most pressing challenges that the region faces as well as long-term investment strategies.

Regional priorities identified in the RTPP include:

- Meeting existing obligations. Preserving and maintaining existing systems
- Strengthening public confidence and ensuring fairness. Pursuing greater accountability, efficiency, and accessibility
- Moving more people more efficiently. Alleviating congestion and crowding while accommodating future growth
IV. User Preferences and Trade-offs

The public engagement process for moveDC interacted directly and personally with thousands of users of the transportation system through public workshops, advisory committees, social media, and casual conversations. The process also engaged a statistically random sample of people from the District, Northern Virginia, and neighboring Maryland counties in a comprehensive research survey.

This survey was designed to provide insight into people’s perceptions and opinions about travel and transportation in the District. The goal of the survey was to better understand people’s attitudes and behaviors related to transportation decision-making and travel under current and future conditions.

Mode Choice Decisions

The survey found that a number of factors appear to strongly influence the choices people make in terms of travel mode—walking, bicycling, transit, and driving. The following were factors in people’s mode choice decision-making:

- **Time.** People (91%) want to make choices on mode that allow them to have a predictable arrival time, while at the same time limiting their trip’s time duration.
- **Control.** People (79%) expressed that the ability to control the trip (arrival or departure time flexibility) was important.
- **Financial assistance.** Half of respondents (51%) who said that they used transit also said that they received some type of fare support assistance. By contrast, only 15 percent of people who have to pay to park receive assistance from their employer for parking.
- **Exercise, health, enjoyment and recreation, and travel efficiency (speed/time).** Each of these factors were cited as reasons people chose to bicycle and walk, with the addition of short travel distance for walking.

With regard to bicycling, respondents who chose to bicycle said that they did so for exercise, health, enjoyment and recreation, and travel efficiency (speed/time) purposes. People who chose to walk did so for most of the same reasons and also said that their short trip length influenced their decision as well.

Research Survey Statistics

- 1,168 total respondents
- 73% from D.C., 14% from Maryland, and 13% from Virginia
- 84% commuters
- 16% non-commuters
- 11% use only single-occupancy vehicles to travel

Perception of the Existing System

The survey asked a number of questions about the existing transportation system and people’s experience with it. The following were perceptions of the existing system:

- **Change is needed to the transportation system.** More than 60 percent of respondents believe that changes need to be made to the bus, rail, and roadway systems.
- **Reliability is a concern.** More than half (53%) of the respondents believed that it is difficult to predict how long a trip will take—highlighting a concern for system reliability.
- **Travel conditions are worsening.** About half (51%) of respondents expressed a belief that it is getting more difficult to travel in the District.

Support for Changes

In addition to asking about current conditions, the survey also sought insight into support for different approaches to improving transportation conditions. The survey found:

- **Neighborhood connectivity is important.** Respondents (71%) indicated that they would give priority to changes that increase neighborhood connectivity.
- **Sidewalks should be a priority.** Respondents expressed strong support (77%), especially
Respondents expressed little support for transit fare increases. Support for transit fare increases was low regardless of whether the increases resulted in more frequent service, service during more hours of the day, or more direct service.

**Future Choices**
The survey provided additional insight into the decisions people would be willing to make in terms of travel.

- **Expanded availability of flexible work schedules would encourage off-peak travel.** Nearly 40 percent of people said that their employers do not offer flexible work schedules. Of this group of respondents, nearly 60 percent said that if their employer offered them schedule flexibility, they would travel during less busy periods.
- **Willingness to walk long distances to transit is limited.** Approximately two thirds of respondents said that they would be unwilling to walk more than five blocks to a transit station.
- **Pre-tax benefits are attractive in encouraging transit use.** Half of respondents said that availability of a pre-tax benefit for transit fare payment would increase the likelihood that they would choose transit, including 33 percent of respondents who say that they currently commute by single-occupant vehicle.
- **Many factors make transit less attractive for some people.** The principal reasons people cited for not using transit included lack of proximity of the service to home (31%) or desired destination (38%), concern for service reliability (37%), crowding on transit (30%), service unavailability (27%), and fare (23%).
- **More and better bicycle facilities and services would encourage more people to bicycle.** People (approximately 30%) said that more bike lanes and trails, bike lanes and trails to transit stops and stations, and enclosed bicycle parking were the strongest incentives to persuade them to bicycle. Additionally, custom route maps for their trips would increase their bicycle use.

**Influences for moveDC**
The survey provided valuable insight into people’s attitudes and behaviors. It afforded the planning process perspective on people’s preferences and beliefs. In addition to the research survey, the public engagement process for the plan generated hundreds of comments on what users value in the transportation system. This feedback echoed the research survey findings. The key themes from the survey and other engagement were:

- **Reliability is very important.** It influences the modes people use to travel and the times they travel. Users place a high value on investments that increase travel reliability.
- **Investments need to be diverse.** People were clear in stating that the existing bus, rail, and highway systems already need investment. They said that bus, rail, and highway systems will need investment in the future.
- **Increased costs are not attractive.** In the abstract, higher costs for transportation are not attractive to users. People want increased investment, but are not necessarily prepared to pay for it, since the Washington region already faces high housing and transportation costs for users. Future investments will need to be efficient and justify expenditures.
V. Transportation Sharing and Technology

The technology-based tools that people in the District and region use to make choices on how, where, and when to travel are constantly evolving. In many ways, the District has become a leading laboratory for the development and use of new technologies that allow people to make better and better-informed travel choices that suit them, while also making the transportation system more efficient and predictable.

A. TRANSPORTATION SHARING

Carsharing

Carsharing is becoming increasingly popular in locations across the country. In the simplest sense, carsharing makes a fleet of vehicles available to members on an on-demand, as-needed basis. Generally, these systems cater to short-term use of the vehicles. Carsharing systems generally permit people to check out a car at one location and return it to another.

Personal vehicle use in the U.S. averages approximately one hour per day, but costs approximately $715 per month. The high cost and low frequency of personal vehicle use combine to make carsharing very appealing from practical and financial perspectives to many people.

On average, carsharing members drive 31 percent less than when they owned a personal vehicle. Some carsharing system operators are reporting that for every rented carsharing vehicle, there are seven to 15 fewer owned cars on the road. As of 2013, there were more than 1,000 carsharing vehicles in the Washington region.

Bikesharing

Bikesharing programs make bicycles available for shared use to individuals on a short-term basis, similar to carsharing systems. In addition to the public transit role that bikesharing systems fulfill, they also expand transit access by increasing traditional 5- or 10-minute walking distances to far greater distances that can be easily covered bicycling.

D.C.’s bike sharing system—Capital Bikeshare (CaBi)—is a tremendous success. According to the Capital Bikeshare Member Survey Report (2013), CaBi’s members drive 198 fewer miles per year after joining CaBi. When considering the number of total members, the nearly 200 miles per member results in more than 4.4 million miles not driven.

On average, each member saves about $800 per year on personal travel cost. Across all members, combined saving is almost $18 million each year.

B. TECHNOLOGY

Increasingly, people are more connected to transportation information. Real-time transportation information allows people to make informed choices about when and how to travel. It also provides information on what the trip experience will be like in terms of time and congestion. Information delivered through smart phone apps, transit screens, and the internet has improved people’s ability to make informed travel choices.

Among the many technology-based transportation innovations under development, driverless cars have the potential to provide broad benefits for society, businesses, and the economy. As reported by the industry working to develop the technology, driverless cars have the potential to do the following:

- Reduce traffic accidents by up to 90%
- Prevent 2,000,000 annual crash-related injuries
- Save as many as 30,000 lives annually
- Increase efficiency through reductions in waste related to commuting and congestion—potentially 4.8 billion hours of commuting, 1.9 billion gallons of fuel, and more than $100 billion in lost worker productivity
- Reduce the size of the auto fleet by as much as 90 percent and increase the use of vehicles within the fleet from less than 10 percent to more than 75 percent.

Driverless cars are just one of many technological innovations under development that have the potential to further revolutionize the transportation landscape.
CHAPTER 2: GRowTH, TRAvEL PAtTERNS, AND NEEDs

Multimodal long-range transportation Plan

Capital Bikeshare is helping residents, workers, and visitors of D.C. travel efficiently
Street life in Dupont Circle
CHAPTER 3: 
Exploring the Future

I. Different Transportation System Approaches

The District of Columbia is a vibrant modern city with a rich history. It is the capital of our nation and a world capital city. The nation’s capital should be a regional, national, and international leader in providing a high-quality and innovative multimodal transportation system that offers a world-class experience for the many people that live in, work in, and visit D.C.

The District has a complex and multifaceted role regionally, nationally, and internationally. The experience and needs of travelers in the District vary and are influenced by who the person is; where they live; where they work, shop, and play; how old they are; their income; and innumerable other conditions. At the scale of individuals, opinions as to what the city’s transportation system needs to do, how it should be shaped, and what it should focus on depend on these factors.

For individuals who participated in moveDC, the themes of discussion that emerged time and again throughout the process were those that the approaches are based around—staying the course; getting in, out of, and moving around within downtown; and connecting the city’s many neighborhoods. As the District grows, the ability to efficiently travel between city neighborhoods and to the greater region will become increasingly important. Meanwhile, as the region grows, access to the District is likely to remain a priority and a critical regional need.

Many different approaches could be taken to help meet the District’s future transportation needs. Each have their benefits and costs. The plan’s vision and goals, in combination with the diverse input collected during the early stages of the planning process, led to defining and evaluating three distinct approaches for the future transportation system.

By constraining detailed evaluation to three approaches, moveDC was able to define distinctive qualities in each approach so as to provide the public, stakeholder committees, and policy-makers with valuable information about trade-offs. The three approaches, developed based on input from the public and stakeholder committees, all offered a diverse and interconnected transportation system within the District and connecting to the region.

From the initial development of the approaches, none were intended to become the transportation plan. Instead, they were designed to be a means of evaluating ideas generated by participants by testing them quantitatively and qualitatively. Each approach is a possible pathway to a 2040 transportation system that supports the moveDC vision and goals. As such, each represents a substantial level of investment and 25 years worth of projects.

moveDC shared the evaluation of the approaches throughout the planning process to gauge reactions and collect feedback. Ultimately, elements from each approach were blended into a balanced, coordinated, and integrated transportation plan, which is presented in the chapters that follow.
II. Building the Approaches
The individual elements in each approach were informed by public and committee input. Public meetings that provided information into the approaches included the Ideas that Build and Ideas on Choices.

A. PUBLIC INPUT ON THE APPROACHES

Ideas that Build
The first round of moveDC public workshops—Ideas that Build—helped to create the foundation of the moveDC Plan and also provide insight into the key building blocks (listed and described in the graphic below) for the approaches. The Ideas that Build workshops sought to identify the public’s priorities for moveDC.

In the building block activity, participants had the opportunity to build thematic plan scenarios. In these scenarios they selected elements they felt were most important to address existing and future transportation challenges within a limited set of resources (funding). Figure 3.1 shows the percentage of participants who prioritized each “building block” as a part of their future scenario. Green bars represent the blocks that acknowledge a need for additional resources.

Figure 3.1: Building Blocks Summary

Public Workshop Responses

- Need Money
- Base

Graph showing the percentage of participants who prioritized each building block.

- Accelerated Go/Go
- Bikeways Everywhere
- Bridge & Tunnel
- Expand or Add
- Fast Transit
- Local Transit
- Low-Cost Transit
- More Metropolitan
- More Car Capacity
- Parking, Move, & Connect
- Smarter System
- Sustainable & Beautiful
<table>
<thead>
<tr>
<th>Building Blocks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Good Repair</td>
<td>Choosing this building block means everything that needs repair or rehabilitation, big or small, gets what it needs so that it lasts a long time. Unlike the business as usual block, more can happen quickly! DDOT also works with WMATA to do Metrorail maintenance more quickly by providing additional funding.</td>
</tr>
<tr>
<td>Bikes and Pedestrians Everywhere</td>
<td>If you want to be able to bike and walk from and to everywhere in the city, this is the building block you want to choose. It builds a comprehensive bike network and dramatically improves things for pedestrians all across the city.</td>
</tr>
<tr>
<td>Bridges and Tunnels</td>
<td>Places; infrastructure; and resources like parks, freeways, and rivers are important parts of the identity of the District. They also make some trips challenging. This building block makes these barriers less of a burden.</td>
</tr>
<tr>
<td>Expand the Grid</td>
<td>Despite the District having a largely interconnected network of streets, there are neighborhoods were street connections are needed. This building block fills in gaps in the street local street network. It does not include major bridges or tunnels.</td>
</tr>
<tr>
<td>Fast Transit</td>
<td>If you like fast transit and Metrorail is not convenient for you, this is the building block for you. This building block gives transit its own space on streets, builds stations where you can comfortably wait, and gets you to most of the major destinations in the city quickly.</td>
</tr>
<tr>
<td>Local Transit</td>
<td>More buses and/or streetcar going more places, more frequently, more days of the week, and more hours of the day with better amenities when you are waiting for the bus—that’s what this building block provides.</td>
</tr>
<tr>
<td>Low Cost Transit</td>
<td>Have you ever made a decision on whether to take a bus or the train based on how much it costs? This building block reduces or eliminates transit fare from the trip decision-making. When you think about this building block, think about reduced fare or fare-free transit for some people or everyone.</td>
</tr>
<tr>
<td>More Metrorail</td>
<td>This building block is about making our Metrorail system more accessible, reliable, available, and faster. DDOT works with WMATA to have more trains, more places, more times of the day without delay. Imagine new lines, space on the platform, and more stations.</td>
</tr>
<tr>
<td>More Car Capacity</td>
<td>There are some bottlenecks that just need to be fixed and some corridors that need more lanes for cars and trucks. This building block focuses on making it easier to drive in the city, but it may not make it easier to drive everywhere.</td>
</tr>
<tr>
<td>Parking Management and Expansion</td>
<td>If you have, use, or need something that is delivered by a car or truck, then parking is probably important to you. This building block increases the physical inventory of on-street parking or takes action to manage the existing space better.</td>
</tr>
<tr>
<td>Smarter System</td>
<td>Ever heard the saying, “work smarter, not harder?” That’s what this building block does for the transportation system. It makes what we have as efficient as possible by coordinating traffic signals and making buses go faster. It provides more information and incentives to make alternatives to driving alone accessible (called Transportation Demand Management).</td>
</tr>
<tr>
<td>Sustainable and Beautiful</td>
<td>There are times that streets function just fine, but could look better or create benefit. This building block would make changes to streets to benefit our rivers and streams, increase the city’s tree canopy, and enhance the look and feel of streets and sidewalks.</td>
</tr>
</tbody>
</table>
Through a map exercise, people shared their comments on their experience with and ideas for the existing transportation system. Figure 3.2 shows a summary of locations where people offered specific comments as a part of the exercise. Green dots are locations where people felt that things are going well, red dots are locations where people identified an issue, and yellow dots are locations that people had an idea for improvement.

**Figure 3.2: How’s it Moving Summary**
**Ideas on Choices**

The **Ideas on Choices** public workshops presented a comprehensive summary of existing transportation conditions in the District and introduced the three approaches to developing a world-class transportation system—Approach 1: Stay the Course, Approach 2: Get to the Center, and Approach 3: Connect the Neighborhoods. Each approach that was introduced sought to provide exceptional travel choices for people who live, work, and visit the District—the moveDC Plan’s vision, paraphrased.

The centerpiece of the workshops was an activity collecting input on the approaches. Responding to this activity, the public posted specific comments on the approach maps and the framework. Public-suggested elements for the approaches included:

- Longer transit hours (24/7 transit)
- Reduce bus headways
- Additional Circulator service
- Flat rate Metrorail and/or unlimited monthly pass
- Suburb-to-suburb or circumferential Metrorail
- Removal of a substantial portion of downtown parking
- Incentives for non-auto modes
- More/improved river crossings for bikes
- A downtown cordon charge that doesn’t penalize residents, specifically low-income households
- Expanded transit in dedicated lanes

Broadly, the exercise in presenting the three approaches to the public created understanding as to why the transportation plan will need to be balanced in its investment strategy. Singly serving commuters, residents, or state of good repair would not achieve the moveDC Plan’s vision or people’s expectations.

People felt strongly that the transportation plan needs to decrease the distance people need to travel to reach high-quality bicycle facilities and that the system needs to extend citywide. As a part of the citywide system, the quality of accommodation at natural barriers and river crossings were a top priority of bicyclists. The expansion of Capital Bikeshare to more locations in the city and to more population groups—including lower income communities—was viewed as essential to improving people’s quality of life.

In terms of transit, participants expressed the desire to have high-capacity transit in dedicated lanes. People shared the opinion that for the system to be able to shift people from other modes—namely driving—to transit, it would have to deliver fast, efficient, reliable services that could only be offered by transit not encumbered by general traffic. Participants also suggested that addressing transit fare issues in low-income communities was important to offering people greater and more efficient mobility.

People’s opinions were mixed on many elements presented for the approach in terms of the vehicular system. Parking continued to be a controversial topic with the only agreement coming in terms of it being available. There was no consensus on how to make parking more available.

Many participants expressed interest in evaluating techniques—price and occupancy (high-occupancy vehicle [HOV]) requirements—to manage traffic along major travel routes and in specific areas of the city. Many people expressed concern about equity in accessing these facilities, fairness about being charged to travel within the District, and the impacts that could result on local streets due to diversion.
B. PLAN AND STAKEHOLDER INPUT

In addition to the public input in building the approaches, moveDC collected information from existing DDOT and other stakeholder plans. Concepts from the District’s Bicycle Master Plan, Transit Future System Plan, and Pedestrian Master Plan, as well as WMATA’s Priority Corridor Network, Momentum 2025, and Regional Transit System Plan documents and processes were incorporated into one or more approaches.

As moveDC developed the approaches, the elements in each were the subject of discussion with the Transportation Plan Advisory Committee as well as the Agency Advisory Committee. Through these processes, in addition to the public engagement, moveDC defined and focused each approach.

C. APPROACH COMPONENTS

To build the approaches, moveDC used modal components, such as protected and non-protected bike lanes, high-capacity transit corridors, and managed roadway facilities to create complete modal networks. These components were identified to establish complete networks and test opportunities for higher capacity or more protected facilities. As with all components of the moveDC Plan, individual elements of the approaches were included with the assumption that further analysis and design would be necessary prior to implementation.

III. Approaches to moveDC

The first approach evaluates what happens if the city continues along its existing course, largely making incremental changes to the transportation system while seeking to balance commuting and neighborhood demands. This approach is most similar to today’s system. The second and third approaches explore the tension between commuter trips and local, short-distance trips and how and where each trip type should be accommodated.

This section describes each of the three approaches developed during moveDC’s planning process. Major infrastructure and policy initiatives for all modes of transportation are described in each approach. Elements of the approaches that are consistent among approaches also are documented in this section. The three approaches were intended to highlight differences in the transportation system and identify key choices that could be blended into the eventual plan scenario.

Following the description of each approach are summaries of performance and characteristics of each approach as well as the future (2040) baseline (existing network with committed projects). Report cards summarizing performance of the approaches for each moveDC goal also is provided. Performance measures used in the evaluation include traditional transportation metrics as well as those pertaining to the long-term health and success of the city as a vibrant, growing urban community.
A. CONSTANTS
There are a set of constants for the moveDC plan—things the District is already doing or is planning to do. Among the constants are maintenance and rehabilitation of existing assets, snow removal, traffic management, planting trees, operating buses, and providing funds to WMATA. Other constants include meeting existing DDOT commitments like the 22-mile streetcar network and replacement of the South Capital Street Bridge. Table 3.1 shows a framework of projects and programs considered to be given elements of the moveDC Plan.

B. APPROACH 1 – STAY THE COURSE
This approach focused on incremental improvements for all the ways people travel and prioritized infrastructure state of good repair. This approach assumes existing levels of funding (with increases for inflation) without new user fees. Table 3.1 shows the framework for Approach 1. The transportation network is shown in Figure 3.3. Major elements, in addition to focusing on state of good repair, include:

- Proposed 37-mile streetcar system
- WMATA’s proposed Primary Corridor Network (PCN)
- Incrementally improved pedestrian and bicycle facilities
- Maintaining rush hour parking restrictions
- Limited application of HOV facilities

C. APPROACH 2 – GET TO THE CENTER
This approach focused on efficiently accessing downtown from within the District, within the region, and outside the region using all modes of transportation. Table 3.1 shows the framework for Approach 2. The transportation network is shown in Figure 3.4. Major elements of this approach include:

- Improved commuter rail services such as MARC/VRE run-through service
- Dedicated space for high-capacity surface transit on bridges and corridors connecting to and within downtown
- Pedestrian and bicycle networks on key travel routes to and within downtown
- Permanent removal of rush-hour restricted on-street parking on key corridors
- Downtown cordon area (congestion charging zone) for private vehicle trips

D. APPROACH 3 – CONNECT THE NEIGHBORHOODS
This approach focused on increasing connectivity, access, and efficiency of travel between neighborhood and key destinations citywide. It prioritized local travel and protected local streets from regional traffic in residential neighborhoods. Table 3.1 shows the framework for Approach 3. The transportation network is shown in Figure 3.5. Major elements of this approach include:

- High-capacity surface transit serving neighborhood-to-neighborhood travel
- New downtown Metrorail line
- Expanded bicycle and pedestrian facilities citywide
- More local street connections
- Permanent on-street parking where rush hour restrictions currently exist
- HOV lanes
### Table 3.1: Summary of Major Framework Elements of the Three Approaches

<table>
<thead>
<tr>
<th>Category</th>
<th>Constant</th>
<th>Approach 1 – Stay the Course</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major Projects</strong></td>
<td>• South Capitol Street Bridge</td>
<td>• Focus on state of good repair</td>
</tr>
<tr>
<td></td>
<td>• 11th Street Bridge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Other major infrastructure repairs</td>
<td></td>
</tr>
<tr>
<td>Pedestrians</td>
<td>• Basic safety and quality improvements (i.e., intersection improvements)</td>
<td>• Incrementally improved facilities</td>
</tr>
<tr>
<td>Bicycles</td>
<td>• Additional CaBi stations</td>
<td>• Incrementally expanded network and improved facilities</td>
</tr>
<tr>
<td></td>
<td>• Planned trail system improvements (i.e., Metropolitan Branch Trail)</td>
<td></td>
</tr>
<tr>
<td>Transit</td>
<td>• 22-mile streetcar system</td>
<td>• 37-mile streetcar system</td>
</tr>
<tr>
<td></td>
<td>• Moderate increase in local transit service (i.e., longer service hours)</td>
<td>• Assistance to WMATA for:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Railcar expansion to increase the number of eight-car trains</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Development of the bus priority corridor network</td>
</tr>
<tr>
<td>Vehicular</td>
<td>• Traffic signal optimization</td>
<td>• Maintained/expanded rush hour parking restrictions</td>
</tr>
<tr>
<td></td>
<td>• Intelligent transportation system upgrades</td>
<td>• Maintained/expanded reversible lane facilities</td>
</tr>
<tr>
<td></td>
<td>• Adequate freight access citywide</td>
<td></td>
</tr>
<tr>
<td>Parking</td>
<td>• Basic performance parking in the busiest commercial districts</td>
<td>• See constants</td>
</tr>
<tr>
<td>Transportation Demand Management</td>
<td>• Basic program</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• See constants</td>
</tr>
<tr>
<td>Policy</td>
<td>• Basic performance parking in the busiest commercial districts</td>
<td>• Limited application of high-occupancy vehicle facilities on highways and bridge crossings</td>
</tr>
<tr>
<td>Approach 2 – Get to the Center</td>
<td>Approach 3 – Connect the Neighborhoods</td>
<td></td>
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<tr>
<td>--------------------------------</td>
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<td></td>
</tr>
<tr>
<td>• Reconfigure bridges and streets that access downtown</td>
<td>• New and better connections across parks, rivers, and railroad tracks</td>
<td></td>
</tr>
<tr>
<td>• Expand intermodal centers</td>
<td>• Reallocate bridge space to better accommodate local travel</td>
<td></td>
</tr>
<tr>
<td>• Improve facilities on key travel paths to and within downtown</td>
<td>• Improved facilities citywide</td>
<td></td>
</tr>
<tr>
<td>• Expand protected bicycle network (cycle tracks and trails) to and within downtown</td>
<td>• Expanded Safe Routes to School program</td>
<td></td>
</tr>
<tr>
<td>• Additional and improved river crossings serving downtown</td>
<td>• New Safe Routes for Seniors program</td>
<td></td>
</tr>
<tr>
<td>• High-capacity transit in dedicated space on corridors connecting to and within downtown</td>
<td>• Expand protected bicycle network (cycle tracks and trails) serving neighborhood to neighborhood travel</td>
<td></td>
</tr>
<tr>
<td>• Dedicated space for high-capacity transit on bridges</td>
<td>• Additional/improved facilities crossing barriers</td>
<td></td>
</tr>
<tr>
<td>• Assist in implementation of elements in WMATA’s Momentum Plan</td>
<td>• Discounted Capital Bikeshare membership and credit card requirement waived for some populations</td>
<td></td>
</tr>
<tr>
<td>• Improved commuter rail services including MARC/VRE run-through service and MARC at L’Enfant Station</td>
<td>• High-capacity transit serving neighborhood-to-neighborhood travel</td>
<td></td>
</tr>
<tr>
<td>• Additional cross-jurisdictional transit services</td>
<td>• Assist in implementation of elements in WMATA’s Regional Transit System Plan</td>
<td></td>
</tr>
<tr>
<td>• Water transit service</td>
<td>• Expanded transit subsidies to users</td>
<td></td>
</tr>
<tr>
<td>• Signal timing to favor access to and circulation within downtown</td>
<td>• Eliminate transfer penalty fee for district-to-district trips</td>
<td></td>
</tr>
<tr>
<td>• Off-peak/off-street loading downtown; consolidated delivery to downtown; downtown loading space reservation system</td>
<td>• Permanent on-street parking where rush hour restrictions exist</td>
<td></td>
</tr>
<tr>
<td>• Permanent removal of on-street parking on key corridors to and within downtown; reallocation of space to other modes of transportation</td>
<td>• Adjust residential parking permit program to better protect residents</td>
<td></td>
</tr>
<tr>
<td>• Designated curbside loading in business districts with reservation system; context-appropriate vehicles and delivery/service hours</td>
<td>• Performance parking in commercial areas citywide</td>
<td></td>
</tr>
<tr>
<td>• Encourage regional intermodal facilities (to intercept trips before they make it to the District)</td>
<td>• Develop neighborhood transportation hubs where people can connect to multiple travel options and have comprehensive travel information</td>
<td></td>
</tr>
<tr>
<td>• Businesses that pay for employee parking must offer equivalent value in cash</td>
<td>• Mandatory TDM programming for new development in all high-capacity, transit-accessible areas</td>
<td></td>
</tr>
<tr>
<td>• Mandatory transportation demand management (TDM) programming for new development within the core</td>
<td>• Implementation of downtown congestion charge area for private vehicle trips</td>
<td></td>
</tr>
<tr>
<td>• Implementation of downtown congestion charge area for private vehicle trips</td>
<td>• HOV lanes</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 3.3: APPROACH 1 – STAY THE COURSE

Approach 1 features high-capacity transit lines (WMATA’s PCN and D.C. Streetcar) throughout the city and bicycle facilities that focus on downtown, and does not include new user fees.
FIGURE 3.4: APPROACH 2 – GET TO THE CENTER
Approach 2 features high-capacity transit and bicycle facilities that serve access to and within downtown, commuter rail enhancements, and a downtown congestion pricing cordon.
FIGURE 3.5: APPROACH 3 – CONNECT THE NEIGHBORHOODS

Approach 3 features high-capacity transit and bicycle facilities that provide connections between neighborhoods, a new Downtown Metrorail line, and managed lanes at entry points to the city.

Legend

- Quadrant Boundary
- Ward Boundary
- Water
- Park

Existing Infrastructure

- Metro Rail Station
- Metro Rail Line
- Cycle Track
- Bike Lane (incl. Contraflow & Climbing)
- Off-Street Path
- Railroad
- Road

Approach Elements

- Off-Street Path (Sidewalk or Trail)
- Bicycle Lane
- Cycle Track
- High-Capacity Transit (Shared Lanes)
- High-Capacity Transit (Dedicated Space)

Approach Elements (cont.)

- Managed Lane
- Roadway Reconfiguration (Includes Bridges)
- New Street
- Metrorail Station
- Union Station Improvements
IV. Approach Performance

Each approach was evaluated to assess overall system performance as well as the extent of transportation choices at a more local level. The evaluation used the Districtwide Travel Demand Model as well as geographic analysis that evaluated proximity, connectivity, and the coverage of modal networks. By evaluating each approach using consistent metrics and methodologies, moveDC was able to compare performance across approaches, which was vital to the process of blending the approaches into the final plan. The performance measures were derived from the moveDC Plan goals to assess how the projected 2040 transportation system would function. The following outlines the performance of each approach.

PERFORMANCE MEASURE DEFINITIONS

Transportation Choice
The number of future transportation options available in a given place is characterized by a “mobility index”. Available transportation options measured by the mobility index (Figures 3.6 through 3.8) consist of protected bicycle facilities (trails or cycle tracks) within a 2-minute ride, bicycle facilities (trails, cycle tracks, or bike lanes) within a 2-minute ride, a Metrorail station within a 7.5-minute walk, and a high-capacity transit (including streetcar) station within a 7.5-minute walk. Each approach is defined such that a sidewalk will be available on one side of every street in the future.

For the purpose of this evaluation, it is assumed that access to vehicular transportation and local bus transportation (Metrobus or Circulator) will not change. The mobility index is shown in maps where green shading represents more choice and red shading represents less choice.

Mode Share
Mode share is the percentage of daily future trips that are forecast to be taken by different means of transportation. The moveDC mode share forecasts were developed using the Districtwide Travel Demand Model.

Access to Transit
Access to transit describes the percent of the District’s forecast future population that will be able to reach high-capacity surface transit, streetcar or Metrorail within a 7.5-minute walk. The distance is measured along a walking route (sidewalk or trail) rather than along a straight line.

Capacity to Move People
Person-carrying capacity measures the ability of the transportation network to move people using all modes of travel. The capacity is calculated using the length of each facility in miles and the number of people that fit into one mile of each facility type. Transit headways, or the time between each consecutive bus or train, also are considered. The person-carrying capacity evaluation does not measure local bus (Metrobus or Circulator) as this service is assumed to be equivalent across the three approaches. Also, it does not measure pedestrian capacity. The calculation does consider the change in vehicular capacity resulting from dedication of space to other travel modes and adjustments to parking policy.

Parking
The forecast modification to on-street parking spaces as a result of adjustments to rush hour parking restrictions is considered.
A. PERFORMANCE MEASURES

Transportation Options

In the Stay the Course approach, the neighborhoods of greater downtown and those along a few major travel corridors have the most transportation choice.

By 2040, this percent of the District population will have access to:

- Sidewalk
- Designated Bike
- Protected Bike
- High Capacity Transit
- Metrorail

Legend

<table>
<thead>
<tr>
<th>Mobility Index</th>
<th>Approach 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Mobility</td>
<td></td>
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<tr>
<td>High Mobility</td>
<td></td>
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</tbody>
</table>

Figure 3.6: Approach 1 - Stay the Course Mobility Index Summary

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Public Review Draft May 2014
Transportation Options

In the Get to the Center approach, neighborhoods along major travel corridors into and out of downtown have the most transportation choice.

By 2040, this percent of the District population will have access to:

<table>
<thead>
<tr>
<th>Sidewalk</th>
<th>Designated Bike</th>
<th>Protected Bike</th>
<th>High Capacity Transit</th>
<th>Metrorail</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Figure 3.7: Approach 2 - Get to the Center Mobility Index Summary

Legend

Mobility Index
Approach 2
- Low Mobility
- High Mobility
Transportation Options
With the Connect Neighborhoods approach, downtown remains well served, while many other neighborhoods also benefit from new transportation choices.

By 2040, this percent of the District Population will have access to:

<table>
<thead>
<tr>
<th>Mode</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk</td>
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<tr>
<td>Designated Bike</td>
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<tr>
<td>Protected Bike</td>
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<tr>
<td>High Capacity Transit</td>
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<td></td>
</tr>
<tr>
<td>Metrorail</td>
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</tbody>
</table>

Figure 3.8: Approach 3 - Connect the Neighborhoods Mobility Index Summary

Legend
- **Metrorail Line**:

- **School**: Ⓥ

- **Hospital**: ⚪

- **Low Mobility**: Red

- **High Mobility**: Green

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Mode Share for Daily Trips

The following briefly summarizes mode share results from each of the scenarios for District to District trips and trips to and from the District and the Region.

Mode Share for District to District Trips

- **Approach 1 (Stay the Course)** has the highest forecast motorized mode share. Approach 1 does not include a widespread application of HOV facilities, a downtown cordon area or an increased TDM program; strategies that may discourage some drivers from traveling by single-occupancy vehicle and encourage them to use another mode.

- **Approaches 1 (Stay the Course) and 2’s (Get to the Center) transit mode shares are the result of higher levels of investment in high-capacity surface transit. The modest difference between Approach 1 and 2’s mode share and Approach 3’s mode share suggests that Approach 1 and 2 may have more transit investment than there is demand for that investment.**

- **Approach 3 (Connect the Neighborhoods)** has the highest forecast levels of bicycling and walking, indicating that a neighborhood-level approach to bicycle facilities could be beneficial and effective.

Mode Share for Trips to or from the District

- **Approaches 2 (Get to the Center) and 3’s (Connect the Neighborhoods) higher levels of transit mode share indicate that transit connectivity between D.C. neighborhoods and to neighboring jurisdictions is beneficial.**

- **Approaches 2 (Get to the Center) and 3’s (Connect the Neighborhoods) increased bicycling and walking mode share indicate that investments in infrastructure within the District and at its borders will influence trips made to and from the District.**

Parking

- **Approach 1 (Stay the Course).** In the future, peak period on-street parking restrictions will remain in existing locations.

- **Approach 2 (Get to the Center).** In the future, on-street parking will be removed from some corridors that currently have peak period parking restrictions to make room for other transportation uses. This would result in a 14% reduction in off-peak parking (as a percentage of total on-street parking supply).

- **Approach 3 (Connect the Neighborhoods).** In the future, peak period on-street parking restrictions will be lifted on key corridors. This would result in a 13% increase in peak-period parking (as a percentage of total on-street parking supply).
Capacity to Move People
Overall, there will be more capacity in the District’s transportation system to move people; however, automobile capacity will decrease to make room for other travel modes.

- **Approach 1 (Stay the Course)** has the smallest increase in person carrying-capacity as well as the smallest reduction in vehicular capacity. Conversely, the largest increase in person carrying-capacity comes with the largest reduction in vehicular capacity in **Approach 3 (Connect the Neighborhoods)**.
- Moving forward, the needs of vehicular travel must be balanced with opportunities to provide increased benefit to overall movement within the District.

Bike/Walk Network
The District will continue to invest in bicycling and walking facilities. By 2040, sidewalks will be available on at least one side of every street and many more bikeways will be constructed. The graphic shows the size of the system planned.

- **All approaches** significantly increase the amount of bicycle infrastructure in the District and also provide sidewalks on at least one side of every street.
- **Approaches 2 (Get to the Center) and 3 (Connect the Neighborhoods)** provide the most bicycle facility mileage (bike lanes and cycle tracks).

Transit Access
The graphic shows the percent of the District’s population that will have access to high-capacity transit and Metrorail.

- **Approach 1 (Stay the Course)** provides the highest level of transit access as it includes the full 37-mile streetcar system and WMATA’s Primary Corridor Network (PCN).
- **Approach 3 (Connect the Neighborhoods)** is the only approach with increased Metrorail access. The new downtown Metrorail line is largely within an area currently served by Metrorail. While it only incrementally increases the coverage of Metrorail, it will have a significant benefit to D.C. and the region.
B. COMPARATIVE REPORT CARD
The three approaches were measured comparatively against each of the moveDC Plan’s goal areas. The goals and performance criteria are discussed in more detail in Chapter 1. The charts present a comparative summary of approach performance within each goal area on a representative scale from 0 to 100.

Citywide Accessibility and Mobility
Maximize system reliability and capacity for moving people and goods. Maintaining connectivity and accessibility in a diversity of ways (driving, public transportation, walking, and biking), while also accommodating freight movements within and through the District is important. Connections to regional transportation facilities are important in providing access into and out of the city.

- A higher rating means: It’s easier to get in and around the city.
- Approach 3 (Connect the Neighborhoods) performs the best because it most increases the person-carrying capacity of the transportation system. The new downtown Metrorail line accounts for a large portion of the increase. Approach 3 is also the only approach that reduces financial barriers to the lowest income transportation system users.
- Approach 1 (Stay the Course) best accommodates the movement and management of freight and goods, but has the lowest increase of person-carrying capacity and is least integrated with the regional transportation system.

Neighborhood Accessibility and Connectivity
Support neighborhood vitality and economic development. Enhanced connectivity and improved transit service can contribute to neighborhood vitality. These investments can reduce travel time and cost for people and also encourage economic development.

- A higher rating means: There are more connections between District neighborhoods and activity centers.
- Approach 3 (Connect the Neighborhoods) scores high among all neighborhood accessibility and connectivity measures, most influentially increasing the coverage of all modal networks throughout the District.
- Approach 1 (Stay the Course), conversely, scores lower among all measures.
Sustainability and Health
Achieve 75% of all commute trips in the District by non-auto modes. We want to promote a healthy lifestyle and sustainable transportation system through the creation of safe places to live, work, and play. Providing for today’s needs without negatively impacting the ability of future generations to do the same is important.

- **A higher rating means**: The transportation system helps to promote an environmentally friendly and healthy lifestyle for District residents, employees, and visitors.
- **The three approaches** compare similarly in terms of sustainability and health, but Approaches 2 and 3 receive higher scores for increasing non-auto mode share.
- **Approach 3 (Connect the Neighborhoods)** is vulnerable with respect to changing environmental and climatological conditions because it adds the most transportation infrastructure in flood zones.

Safety and Security
Achieve zero fatalities and serious injuries on the District transportation network. The transportation system can contribute to safety and security by providing enhanced accommodations for walking, bicycling, driving, and transit. Sidewalks and accommodation for emergency evacuation are considerations within this category.

- **A higher rating means**: The transportation system will be safer.
- **Approach 3 (Connect the Neighborhoods)** scores highest due, in part, to improved redundancy of transportation networks to handle emergencies. Approach 3’s new downtown Metrorail line accounts for a large portion of the increase.
- **The three approaches** all expand the sidewalk network to at least one side of every street.
Public Space
Reinforce Washington, D.C.’s historic landscapes and quality of neighborhood public space. Washington, D.C.’s historic and cultural features combined with its distinct neighborhoods and public spaces contribute to the District’s unique identity. World-class cities are defined not only by their great spaces, but also by the corridors that connect them. Streets should be attractive and walkable.

- A higher rating means: Streets are more attractive and walkable. There are more street trees.
- The three approaches score similarly, but Approach 3 (Connect the Neighborhoods) provides the most opportunity to improve streetscapes and enhance the public realm through its identified infrastructure investments.

Preservation
Maximize reliability for all District transportation infrastructure by investing in maintenance and asset management. Infrastructure is aging in the District and will need continued investment. There is a need to balance maintenance and transportation system enhancements to ensure that the transportation system can achieve a “state of good repair.”

- A higher rating means: A lesser amount of infrastructure is added to the transportation system, requiring relatively less resources to maintain compared to other approaches.
- The three approaches score similarly, but Approach 2 (Get to the Center) invests in new transit infrastructure to a lesser extent than the other approaches. A smaller amount of new infrastructure requires relatively less resources to maintain.
V. Influence of Input on the Plan

A. SETTING THE FRAMEWORK FOR THE PLAN

The analytic and public evaluation of the approaches provided tangible perspective to the planning process. It clearly articulated the need to create a balanced transportation investment strategy in the District—modally, size and scale, and geographically. The evaluation also highlighted where the process and its recommendations needed to tread with care.

The approaches provided insight into high-capacity surface transit lines, key bicycle facilities, transportation system management strategies, new Metrorail lines, and infrastructure reconfiguration benefits and in some cases, lack thereof. Substantively, the approaches also offered perspective to the process in terms of the important role of integrating policy, infrastructure, programs, and services.

B. IDEAS TO moveDC

The third and final round of workshops—Ideas to moveDC—coincided with the final phase of the development of the moveDC Plan. It also was coordinated with the launch of the project’s MetroQuest survey, an online interactive engagement initiative that more than 1,600 people participated in.

At the Ideas to moveDC workshops, the performance of the three plan approaches in terms moveDC’s vision and goals was discussed in parallel with the presentation of a preliminary blended approach—the moveDC Plan’s first draft. The Draft Blended Approach was the combination of physical investments that could become part of the moveDC plan.

Based on feedback at the workshops, approximately 66 percent of participants believed that Approach 3 (Connect the Neighborhoods) had the best bike network. Meanwhile, 59 percent believed that Approach 3’s (Connect the Neighborhoods) transit network best met the city’s future needs. In terms of the street network, there was little consensus as to the most appropriate approach.

The MetroQuest survey provided additional insight into what people valued overall (Figure 3.9) and as a part of the approaches. Citywide mobility and neighborhood connectivity received the most high priority selections and the most votes overall.

MetroQuest participants expressed strong support for Approach 3 (Connect the Neighborhoods) and very little for Approach 1 (Stay the Course) (Figure 3.10). Longer duration of transit service at a higher frequency, investments targeted to improving safety, and more and better sidewalks were specific priorities of respondents.
Perspective on Policy
Policy was an area of discussion during the meetings. People generally liked the idea that pedestrians would be the District’s highest priority. They also liked an approach to transportation that encourages active living (and health). Go anywhere, all day transit along with priority on state of good repair were generally supported as policies to carry forward.

People expressed concern about having a policy that allowed bicycles and taxis to travel in protected transit lanes where service was less frequent and the streets were not so steep as to dramatically slow bicyclists. The concern was less about bicycles sharing space, which people supported under the right lane width condition for the transit lane. The concern was centered on taxis in the lanes having the unintended consequence of reducing the effectiveness of the transit lane.

There was little agreement on the policy to define where bicyclists would be permitted to ride on sidewalks. People expressed concern on both sides of the issue, with specific comments relating to safety for pedestrians (related to bike conflicts) and for safety for bicyclists (related to vehicle conflicts).

Blended Approach Comments
Through notes on the maps and feedback on questionnaires, workshop participants were able to communicate feedback to the team on the draft blended approach. The following briefly summarizes input on the modal networks of the draft blended approach:

Transit Network
- General support for water transit
- General hesitance that shared lanes can support “high-capacity transit”
- Support for a Metrorail or streetcar “loop” in downtown
- Streetcar (overall) should follow a different route from Metrorail Orange/Green Lines
- Support (93% of participants) for extended transit service hours

Street Network
- General support (80% of participants) for a cordon area (congestion charge zone) with specific caveats pertaining to the size of the area (both too large and too small) and the concern for impacts on low income populations
- Support for strategic projects reconnecting the street network in some neighborhoods

Bicycle and Pedestrian Network
- Strong support (93% of participants) for making pedestrians the highest priority
- Desire for safer bicycle facilities in general and more protected bike facilities specifically
- Support for increased education about the “rules of the road” for all system users
- Importance of completing Metropolitan Branch Trail and other major transportation-oriented trails citywide
Conclusions
People expressed a desire to have DDOT better prioritize bicyclists and pedestrians in policy-making and projects that are not necessarily bike- or pedestrian-specific. In general, the transit and bike networks connecting neighborhoods (Approach 3) were preferred to those that had an emphasis on downtown (Approach 2).

People recognized the need and value of connecting bicycles and transit networks to downtown. They also conveyed that with the limited resources and space to improve transit and bicycle networks, the moveDC Plan needs to balance downtown-focused mobility and neighborhood-to-neighborhood mobility. People’s input suggested a strong preference toward investing in a robust protected bicycle network and network of dedicated transit lanes.

Figure 3.9: Participant Approach Rating Summary

Approach 1: Stay the Course  
Average Rating: 2.5

Approach 2: Get to the Center  
Average Rating: 3.2

Approach 3: Connect the Neighborhoods  
Average Rating: 4.2

Figure 3.10: Summary of Ranks of Plan Values by Participants
VI. Approach Evaluation
Conclusions

The three approaches, developed based on input from the public and stakeholder committees, were used to test ideas that could become elements of the recommended plan. The evaluation and public's feedback on each approach provided insight, such as the following, that guided plan development.

- **Lane management and congestion pricing** have the potential to provide reliability for vehicular trips when coupled with multimodal improvements.
- **Multimodal improvements that increase capacity** to and from the downtown and those that increase access between neighborhoods are both beneficial.
- Where **multimodal improvements require space within existing street rights-of-way**, the trade-offs between displacing parking, travel lanes, and providing dedicated space (and the configuration of that space) will need to be carefully considered.
- Infrastructure alone may not be enough to reach a 75% non-auto mode share. **Support from programs and policies will be needed.**
- A **new downtown Metrorail line** only minimally changes coverage of Metrorail in the District, but has considerable benefits to the District and region in reducing congestion on transit.
- Investments in **high-capacity surface transit** will need to be made strategically and in coordination with investments in local bus service, streetcar, and Metrorail.
- Additional **bicycle and pedestrian facilities** are beneficial and important. They will increase the transportation system’s person-carrying capacity and encourage increased walking and bicycling. Bicycle facilities can help to support transit investments and should be oriented to/from/within the core as well as between neighborhoods.
- **State of good repair investments** are not always valued by users, but directly influence safety and reliability of the system, which are top priorities.
VII. Toward the Future

The evaluation of the three approaches and a blend of the three, helped to inform the development of the recommended plan, which is described in the chapters that follow. Supporting the District’s needs into the future will require a balanced approach to the transportation system. The approach will need to offer District residents, workers, and visitors many different travel choices in all parts of the city. The scale of investments in different parts of the city need to be coordinated with local growth and regional influences.

Investing in a comprehensive transportation strategy over the long-term has the potential to offer D.C. the promise of continued local, regional, and global competitiveness; even more vibrant neighborhoods; prosperity shared among all its residents; and leading stewardship of the environment.
Chinatown offers multimodal transportation options and is a popular destination for retail, dining, and entertainment.
CHAPTER 4: Policy and Planning Framework

I. Perspective

From the beginning of moveDC, the development of the District’s multimodal long-range transportation plan was about more than achieving transportation outcomes. Transportation has a significant role to play in the District achieving its goals relating to shared prosperity, neighborhood vitality, environmental stewardship, and competitiveness.

In the District, the transportation system must strike a careful balance between serving the needs of its residents, a large non-D.C. workforce that arrives and departs each day, and the many people who visit the city—some for a day, some a week or month, and some for several years. The transportation system also must successfully execute a balancing act among serving residents and coordinating and connecting to infrastructure and policy at the regional level.

The transportation infrastructure plan and citywide multimodal policies presented in this chapter describe the recommended networks of facilities, services, and policies to achieve D.C.’s transportation goals, while enabling the city to meet the broader goals described above. Within the context of moveDC’s recommendations are the recognition of using the infrastructure the city already has wisely and efficiently; targeting investment to benefit people’s mobility and quality of life; and using the transportation system to improve the environment.

The final policy and planning framework, including the recommended infrastructure plan, drew from the best ideas of each of the transportation system approaches in the previous chapter, while working to create connected modal networks Districtwide. Additional detail on policies, programs, and other initiatives are contained in the Modal Elements.
II. Policy Framework

Policies are valuable tools that guide decisions about how to build, expand, operate, maintain, and progress the transportation system. The transportation plan presented in this document stands on a base of infrastructure, service, and policy recommendations. The policies in this section are organized into the following broad categories, which together respond to moveDC’s vision and goals:

- Enhancing the multimodal system
- Prioritizing pedestrians
- Improving bicycling safety and convenience
- Maximizing transit value and opportunities
- Managing streets to expand person-carrying capacity and reliability
- Maximizing efficiency through transportation demand management
- Using placemaking to create a dynamic public realm
- Identifying sustainable funding strategies
- Proactively managing the transportation system
- Connecting transportation technology with users

A. ENHANCING THE MULTIMODAL SYSTEM

The multimodal street network will need to accommodate existing and future transportation demand for all users, of all ages and ability levels, and all travel modes. The recommended policies in this section address the way in which the system can achieve greater multimodality. Modal-specific policies—those that do not pertain to the system in whole—and additional background information are included in each of moveDC’s elements. The following are recommended system-level policies addressing the District’s future transportation system.

Prioritize the needs of trips that start and/or end in the District over those that use D.C. as a through route.

The District needs to preserve existing capacity to ensure a balanced system that offers modal choice for residents and visitors within the district. This should guide priority over any trips that use D.C. as a through route.

The District’s Interstate highways, although designed primarily to offer access to and from central Washington, nonetheless carry traffic through the District and serve an important regional function. This function should be maintained and the Interstate highway system in the District should be kept in a state of good repair.

Plan for routes and stations to connect across transportation modes and jurisdictional boundaries.

DDOT should work internally and with its regional partners to ensure that projects—transit, bicycle, pedestrian, technology, and vehicular—that connect across the District boundary align and are consistent with adjoining jurisdictions’ plans. Investments in the transportation system connecting with regional neighbors have the potential to enhance the function of the transportation system in the District of Columbia.

Using the same approach, all transit stations should be opportunities for multimodal connections, with walking and biking serving as easy beginnings or endings of any transit trip. Coordination among these project opportunities should be facilitated through the Metropolitan Washington Council of Governments and between the District and affected/adjoining jurisdictions.

Establish modal priorities on District streets.

Every non-local street should prioritize pedestrians, accommodate driving and local deliveries, and support one of the following modes:

- Protected bicycle facilities
- Dedicated high-capacity surface transit lane(s)
- Dedicated freight routes
- A combination of these modes in simpler accommodation
Decisions on which modes will be prioritized on streets are illustrated in the moveDC Plan and based on network connectivity, land use, and travel demand.

**Allow flexible use of rights-of-way during non-peak periods.**

Vehicular traffic volumes in the District are highest during weekday commute times. On weekends and during off-peak weekday periods (middays and evenings), traffic volumes are considerably lower and many streets have available capacity that can be repurposed for other uses including pedestrians, bicycles, and recreational space.

In addition to the many special events that use the District’s roads on a yearly basis, the District should work with citizen groups to identify locations and time periods where rights-of-way can be used for purposes other than vehicular travel. Weekend closures of Beach Drive in Rock Creek Park are already an example of this type of flexible use, as are the many neighborhood festivals in the District.

**Enhance transportation education at all levels.**

Safer streets require more than physical improvements. They also require users to understand their own responsibility to safely use the system for themselves and others. A key approach to achieving this is safety education for the public and for owners, managers, and operators of the system.

For the public, educational materials should be integrated into school curricula and day-to-day communication. In addition, information should be shared through regular programs and materials hosted and developed by the Department of Motor Vehicles. DDOT currently develops educational and awareness campaigns through National Highway Safety Transportation Administration (NHTSA) grants and through the region’s Street Smart campaign. DDOT should continue to support the promotion of transportation education into D.C. school curricula to help further educate people on transportation.

For owners, managers, and operators, new information related standard operating procedures, agency standards, laws, regulations, policies, and guidelines should be incorporated into regular and/or mandated training programs.

**Enforce the rules of the road for all users.**

Safety is the most basic standard for a transportation network. The District supports a culture of safety for all modes throughout the District, and encourages respect for all users by all users. DDOT should assist the Metropolitan Police Department (MPD) to provide effective enforcement of the laws for all users.

DDOT should continue to work together with MPD, the Department of Motor Vehicles, and Department of Public Works to provide education and outreach regarding the rules of the road. Education related to newer laws pertaining to bicycles, pedestrians or new facilities, should also be provided to those enforcing laws to ensure greater consistency and effectiveness.
B. PRIORITIZING PEDESTRIANS

Every trip starts and ends as a walking trip—regardless of whether or not another mode is used at some other point in the trip. Pedestrian safety and mobility for people of all abilities and ages is essential to a successful multimodal transportation system. The following are recommended citywide policies for prioritizing pedestrians. More detailed infrastructure, policy, and program recommendations for pedestrians are included in the Pedestrian Element.

Incorporate pedestrian priority into planning, policy, and programming.
The District should adopt formal policy statements to confirm that pedestrians are the District’s highest transportation priority.

Denver, Colorado, has taken recent steps in this direction with a City Council action declaring pedestrian and bicycle safety would be top Council budget priorities. A D.C. Council resolution could make a similar statement. Ongoing DDOT policies, standards, and design guidelines can reinforce this priority.

Create a pedestrian environment that accommodates people of all ages and abilities.
Creating a pedestrian environment that accommodates people of all ages and abilities starts with providing a sidewalk on at least one side of every street throughout the District. Approximately four percent of the blocks in the District have missing sidewalks on one or both sides of the street. The presence of sidewalks is critical to the safety of pedestrians.
because they provide an accessible travel path that is separated from traffic.

The District should seek to have sidewalks on at least one side of every street and preferably on both sides of every street. All sidewalks should be constructed in conformance with the latest ADA Accessibility Guidelines, but also should strive to meet the more robust standards of Universal Design and the Architectural and Transportation Barriers Compliance Board’s proposed accessibility guidelines in the Public Right-of-Way Access Guide for the design, construction, and alteration of pedestrian facilities in the public right-of-way. Where sidewalks are not possible, streets should provide safe walking space within the roadway.

In coordination with providing a complete network of sidewalks, pedestrian crossings should be provided across all legs of an intersection unless a special exception can be clearly justified. As part of this recommendation, street trees should be considered a significant benefit to the walking environment (and offer a return to Washington, D.C.’s historic aesthetic) and should be included throughout the District. The Sustainability and Livability Element provides recommendations on street trees and other elements that contribute to the creation of quality places in public spaces.

C. IMPROVING BICYCLING SAFETY AND CONVENIENCE

Bicycling is a great way to expand the reach and capacity of the transportation network. The number of bicycling trips has increased dramatically throughout the District in the past five years and can continue to grow with investments in facilities, education, enforcement, and encouragement. The following policies are recommended to help expand bicycling citywide. More detailed infrastructure, policy, and program recommendations for bicycles are included in the Bicycle Element.

Update District of Columbia laws, regulations, and policy documents to address bicycle accommodation.

Some current D.C. laws, regulations, and policies regarding bicycles are outdated and do not reflect current bicycle safety requirements or needs. Changes should be made to the District’s Comprehensive Plan (District of Columbia Municipal Regulations [DCMR] Title 10), Zoning Ordinance (DCMR Title 11), Traffic and Parking Regulations (DCMR Title 18), Open Space and Safety Regulations (DCMR Title 24), and DDOT Design and Engineering Manual.

Use Bicycle Level of Service (BLOS) as a way to measure and prioritize bicycle investments on District streets.

DDOT should seek to improve at least one letter grade of BLOS for five percent of District lane miles per year, prioritizing streets currently operating at BLOS E or F.

D. MAXIMIZING TRANSIT VALUE AND OPPORTUNITIES

Transit—inclusive of local and regional bus, high-capacity surface transit, streetcar, Metrorail, and commuter rail—is a critical element of the District’s transportation network. The city has a robust transit network; however, there are places that are difficult to reach by transit and times with limited service. The expansion of effective transit services Districtwide could have a tremendous impact on people’s quality of life, the quality of neighborhoods, competitiveness in the city, and the operation of the transportation system. The following are recommended to maximize the value and opportunity of transit citywide. More detailed infrastructure, policy, and program recommendations for transit are included in the Transit Element.

Provide go anywhere, all day transit.

The District’s transit network should allow residents, workers, and visitors the ability to travel anywhere in the District by transit in a convenient and reliable manner. By expanding and upgrading the District’s public transport network over the next 30 years, the system will provide excellent accessibility throughout much of the city, not just downtown. With this degree of accessibility, users will be able to use the transit system as much as they would use their car and be able to go anywhere in the District.

Further reduce the barriers to transit access in low-income neighborhoods.

When people opt to pay less to ride a slower transit service, they are sacrificing their time and ultimately the District’s potential for economic productivity. This is especially prevalent in low-income neighborhoods further outside of downtown where travel times into education and job centers require
significantly longer travel times by bus than by train. To further increase transit access, the District should continue to reduce the cost of rail trips starting or ending at stations in low income neighborhoods. Precedent programs to achieve this objective already exist, including the Anacostia Special Bus Fare, where the District funds discounted transfer for WMATA riders transferring from bus to rail using SmarTrip cards at the Anacostia Metro Station, and SmarTrip cards reduced from $5 to $2 and made accessible at local retailers in low income neighborhoods.

E. MANAGING STREETS TO EXPAND PERSON-CARRYING CAPACITY AND RELIABILITY

Private vehicles, including cars, taxis, and trucks, are a vital component of the District’s transportation system. Although vital, not unlike other modes of transportation, they require proactive management to support the needs of the transportation system without resulting in congestion and gridlock. The following policies are recommended to help make effective use of the vehicular transportation system. More detailed infrastructure, policy, and program recommendations for vehicles are included in the Vehicle Element.

Move traffic efficiently and safely by optimizing traffic signal operations on all major roadway corridors and updating corridor traffic signal timing on a regular basis.

Beginning in 2011, DDOT began to modernize the District’s traffic signal system. In coordination with the system modernization, a 5-year traffic signal timing optimization project began. The traffic signal optimization project includes replacing outdated traffic control software and equipment at intersections and re-timing traffic signals. When complete, more than 1,600 signals will be upgraded. Current plans are for traffic signal timing to be evaluated and reassessed on a 5-year rotating basis.

The modernization of the citywide signal system will add critical new features to support the increasingly complex multimodal needs of the District’s transportation system. The system should include transit beneficial features such as transit signal priority and pre-emption. It also should include features that enable better active and real-time management of the system during events and special situations. Emergency vehicle pre-emption should be considered as the system is modernized.

Actuated bicycle signalization and special bicycle signals should be incorporated at key locations.

Improve multimodal travel reliability and reduce congestion through area and corridor management strategies.

As the District continues to grow, managing vehicle access on key corridors and to key destinations through price or minimum vehicle occupancy may become an important approach to providing reliable access to activity centers. The District’s congested entry routes, including freeways and bridges as well as the Central Employment Area, are areas to explore occupancy and pricing as ways to manage congestion, as referenced in Recommendation A.5.

Lane management typically uses price and/or occupancy requirements to manage vehicular demand in designated lanes or on roadway facilities. Typically, high-occupancy vehicles and transit vehicles are permitted to use managed facilities at a discounted rate or for free.

In addition to corridor-specific pricing and vehicle occupancy strategies, area management strategies should be considered. The best known examples of area pricing are based on a cordon area and typically involve center cities and the places and times of day with the highest concentrations of travel demand. Cordon pricing requires investment in vehicle detection and payment collection technology prior to it taking effect.

A cordon area in the District could be implemented for weekday trips into the Central Employment Area at a rate approximately equivalent to a round-trip peak period Metrorail fare. Revenues from the zone should be dedicated to operations and maintenance of the managed facility (or area) and toward projects that expand the person-moving capacity of the transportation system, including those providing greater access to the priced areas or corridors.

The aforementioned approaches to managing demand also would help to manage the reliability and accessibility of goods movement and delivery in the District. In addition, they would help to improve the District’s air quality by reducing the amount of delay per vehicle throughout the transportation network.
Fees collected as a part of area or corridor pricing strategies should apply to all single-occupant vehicles, whether they are from the District or not. Pricing strategies should seek to exempt high-occupancy vehicles from fees.

**Manage vehicular speed for safety and efficiency.**
The District should emphasize safety and vehicle speed management in the design of all streets by designing streets to meet the posted speed limit. The District also should evaluate speed limits in excess of 25 mph to assess the trade-offs between travel time and safety.

In addition to traffic operational benefits of a steady vehicle speed profile, lower vehicle speeds tend to result in fewer and less severe crashes for all modal users. In the case of pedestrians and bicycles, vehicular speeds of less than 20 mph result in significant safety benefits in terms of crashes resulting in fatality or severe injury.

Many people believe that the regulation of the transportation network to promote low vehicular speeds results in longer travel time and more congestion along a given street. While this can certainly be the case, in most instances it is not. The stop-and-go nature of urban driving, combined with the practical matter of intersection capacity, results in an optimum urban street capacity at a speed of approximately 25 mph.

**F. Maximizing Efficiency Through Transportation Demand Management**
The entire transportation network operates best when supply and demand are managed. Transportation Demand Management (TDM) is a complement to the previously identified policies for multimodal capacity. TDM seeks to maximize travel opportunities within the transportation system through strategic programs, policies, and services. The following recommended policies seek to expand opportunities for system efficiency through TDM. More detailed infrastructure, policy, and program recommendations for TDM are included in the TDM Element.

- Incorporate TDM programs in all development projects that impact the District’s right-of-way. The District should ensure TDM programs are provided for all development projects that impact the District’s right-of-way.

This would establish TDM as an important element for site and transportation access, with different quantities and types of TDM programming for different development intensities and in context with the transportation options available within any given neighborhood.

TDM programs do not need to be onerous; however, all developments have a role to play in reinforcing the District’s commitment to vehicle trip reduction. There are design-based TDM measures that all developments can provide without requiring ongoing investment or operation. These include:

- Leaving space and providing Wifi in lobbies for information and connections to taxi/transit/ridesharing services
- Ensuring that designs reflect moveDC pedestrian and bicycle plans
- Ensuring adequate pedestrian and bicycle facilities under current codes as well as any anticipated requirements above and beyond the master plan
- Provide bikeshare/carshare facilities on-site for use by the public
- Orienting development to the street and allowing for a clear path from the front door to transit facilities
- Managing parking in a way that reflects the urban nature of the District
- Participation in neighborhood programs/promotions

Efforts could be as simple as acknowledging receipt of an information packet describing the District’s multiple transportation programs when a building permit is approved (the person obtaining the permit would be responsible for supplying the materials to the building occupants). These and other low- or no-cost options are items that all developments, regardless of size, could incorporate.

**Develop policies and incentives to “car-lite” living.**
DDOT should investigate the feasibility of financial or other incentives for car-lite living, including tax incentives, as households without a vehicle place fewer demands on the city’s roadway and curbside networks, generate fewer environmental...
emissions, and generate less opportunity for crashes. The District should further support car-lite living by continuing to dedicate on-street parking spaces for carsharing vehicles and continuing to allow carsharing vehicles to use curbside space throughout the city.

G. USING PLACEMAKING TO CREATE A DYNAMIC PUBLIC REALM

The District’s transportation network is for more than travel. It is also how most people experience the city. Employing the public realm to create better places provides additional value beyond mobility. The following recommended policies seek to expand opportunities for sustainability and livability citywide. More detailed infrastructure, policy, and program recommendations for sustainability and livability are included in the Sustainability and Livability Element.

Develop a Placemaking in Public Space program.

DDOT should develop a placemaking in public space program to encourage and actively promote opportunities for enhancement in ineffective and under-used spaces citywide. Any enhancements within the public realm should prioritize safety and functionality of the space and carefully consider the impacts of the change to the space prior to any modifications being made. Examples of placemaking include:

- Green infrastructure
- Public art
- Beautification projects
- Public plazas
- Parklets
- Café seating

Protect the physical environment through low impact design (LID).

DDOT should incorporate LID into streets to be consistent with the efforts of the District Department of the Environment, which seeks to reduce stormwater runoff pollution and has in place a vigorous stormwater program and stringent citywide regulations. Major initiatives include significantly reducing stormwater pollution flowing into the area’s water bodies by making the land “spongier” and creating financial incentives for the installation of stormwater retrofits.

H. IDENTIFYING SUSTAINABLE FUNDING STRATEGIES

The District will need to aggressively invest in transportation strategies to meet the demands of a growing population. Many different financing and project delivery strategies will be needed in the long-term to meet the city’s many transportation needs. The following system-wide policies are recommended. More detailed information on funding and overall implementation is included in Chapter 5, Implementation.
Identify a variety of funding and delivery approaches for construction and operations of the transportation system.

DDOT should continue identifying and pursuing opportunities in Public-Private Partnerships (PPPs or P3s) for infrastructure delivery. There are many different combinations of the way in which PPPs can occur, but the goal of nearly all of them is to deliver infrastructure projects more effectively (time and monetary cost). The combination of funding from public and private sectors can significantly expand government agencies’ purchasing power for projects and reduce their time in delivery (planning, design, and construction).

A Federal Transit Administration survey of eight PPPs for transit projects found that the surveyed projects were operational one to six years earlier than planned and realized cost savings of $1 to $38 million. As with design-build and design-build-operate-maintain project delivery (both described below), PPPs also reduce the need for separate bids at each project stage, and private companies in a PPP often bid for a project with a fixed fee and thus do not require time for lengthy negotiations of financial terms.

DDOT has used approaches such as design-build-to-budget on recent District projects, including the 11th Street Bridge and the H Street Streetcar Line.

Evaluate the role of the District’s transportation investments in regional economic development.

The District should articulate the regional economic benefit of strategic transportation investments in infrastructure located in the District. The District of Columbia’s transportation infrastructure may be located within the city’s boundaries, but it often is essential to the region’s mobility. Investments that the District makes improve access to the Washington area’s largest employment center (and the largest in the United States outside of New York) and undoubtedly benefit residents of neighboring Maryland and Virginia by maintaining a functional and reliable transportation system in the city.

The long-term viability of D.C. continuing to make these kinds of investments—many of which are very large—is closely tied to making a regional business case for their benefit to the entire region. This may not yield direct financial assistance from the other states, but it can help to guide discussions of how to prioritize transportation projects in regional long-range plans, how Maryland and Virginia may be able to offset D.C.’s outlay of resources through increased support for transit operations or other regionwide contributions, and how these states can help D.C. in appealing for federal funding assistance that benefits the entire region.

Support a regional infrastructure bank for mega-projects.

The District should start a dialogue on and support the formation of a regional mega infrastructure bank. Usually executed at the state level or regional level, infrastructure banks can be used to help to fund and deliver projects that are critical to a region’s (city’s or state’s) development that could not otherwise fit into fiscally constrained programs.

The Federal state infrastructure bank (SIB) program currently in place was established in the SAFETEA-LU transportation bill, although SIBs have been allowed in some form since the mid-1990s. The SIB program allows states to establish infrastructure-specific revolving funds in partnership with USDOT and for these funds to be capitalized with federal funding. They allow loans at reduced rates, financing of bonds, credit lines, bond insurance, and other loan guarantees.

Washington, D.C.’s state-equivalent status means that it may be able to develop such a program, but most likely should look to do so in partnerships with other regional partners.

I. PROACTIVELY MANAGING THE TRANSPORTATION SYSTEM

Maximizing the efficiency of the transportation system will require policy refinements and performance monitoring. The following are recommended systemwide policies to address proactive system management. More detailed infrastructure, policy, and program recommendations for system management are included in several modal elements.

All transportation investments also should be State of Good Repair projects.

DDOT should seek to align project programming and funding between projects intended to bring the transportation system to a State of Good Repair (SOGR) and new construction and enhancement projects. The purpose of doing this is not only to combine funding sources and realize efficiency in project
delivery, but also to demonstrate an agency commitment to showing that repair and maintenance of the transportation system are just as important as major changes to it. SOGR refers to maintenance and rehabilitation projects that keep infrastructure in a sound and functional condition and offset the need for more costly, extensive maintenance into the future. For DDOT, the logistical needs of these projects, such as maintenance of traffic, mobilization of work crews and equipment, and potential temporary impacts on parallel infrastructure systems (such as utilities) represent project costs. To the extent that other adjacent or connected projects can be integrated into the SOGR project, an overall cost savings may be achieved by reducing the outlay of resources needed for these functions of project delivery. This may require additional environmental analysis on a project-by-project basis.

Further formalize the data collection, evaluation, sharing, and monitoring program within DDOT.

Unified data collection and monitoring programs are a key means of identifying where changes to the transportation system are needed, creating universal application of policies and standards, and providing informed evaluation as to what is most effective after implementation. DDOT should establish a program across its different administrations to allow consistent data formats, regular updates, and systematic means of evaluation and monitoring of transportation system performance. This policy also includes making public access to as much non-personal or non-proprietary data as possible in real time or close to it.

J. CONNECTING TRANSPORTATION TECHNOLOGY WITH USERS

DDOT has a tremendous opportunity to leverage technology and data to shift the transportation landscape for people, build stronger communities, and create a highly responsive transportation system. The following are recommended systemwide policies for transportation technology integration. More detailed infrastructure, policy, and program recommendations for technology are included in several modal elements.

Encourage open data to stimulate public and private collaboration in data exchange and creation of valuable information for operators and consumers.

To the extent possible and reasonable (to protect privacy and other appropriate rights), DDOT should collect and compile data from existing systems and those being planned in an open format. The amount and type of data that is collected from systems throughout the transportation system and by its users is staggering.

The primary issues to open data lie in access permissions and rights to data and the format in which it is stored. Getting data out of systems and having it available for use in analytical and operational purposes can have tremendous benefits in terms of delivering more effective and efficient transportation solutions. Innovation begins with a full understanding of issues and data access is among the keys to understanding those issues.

Support autonomous vehicle implementation and connected vehicle research, using D.C. as a test bed for the nation.

Autonomous and connected vehicles have the potential to improve safety, efficiency, and mobility while also reducing parking challenges and improving air quality. Successfully implemented, autonomous vehicles can offer people the convenience of driving, without many of its negative impacts and challenges. Like any new technology, additional study of autonomous vehicles is needed to evaluate things like safety in a complex urban environment.

With or without autonomous vehicles, connected vehicle technology can offer people a safer, more efficient, and more predictable driving experience, while at the same time, allowing the transportation system to perform better.

Successfully implemented, connected vehicle technologies could transform operations for the District by helping to reduce crash frequency and severity, providing data to traffic managers in real-time to optimize system performance, providing travelers better information to make informed travel choices and to understand the impact of those choices, and permitting vehicles to talk to the system to increase vehicle energy efficiency and system operational efficiency.
III. Planning Framework

Most of the District’s significant streets have more demand by all modes than there is space, time, or money to accommodate. As it pertains to the day-to-day realities of building and operating a transportation system in a dynamic and growing city, this is not at all surprising. In nearly every city, a small number of a city’s streets are called upon to do everything or nearly everything—be a primary bike corridor, strategic freight route, dedicated lane transit corridor, priority pedestrian route, main vehicular artery, and place to park.

A. DECISION-MAKING FRAMEWORK

Rather than forcing each major street to be modally complete, the moveDC Plan recommends a complete and integrated network for all transportation modes. The recommended networks draw from the best concepts in the three transportation system approaches. Figure 4.1 shows modal priorities on District streets that would result from moveDC infrastructure recommendations.

Off-street infrastructure recommendations, such as Metrorail modifications, commuter rail changes, and trail recommendations were coordinated with street-network level recommendations as the complete networks were developed. The following approach guided the development of the moveDC Plan:

1. Every street should prioritize pedestrians and permit vehicles and local deliveries to operate

2. Every street should fully accommodate one of the following:
   - Bicycles in a protected facility
   - Transit in dedicated (and protected) lanes
   - Vehicular traffic and freight

3. Where the street network is limited in terms of connectivity or where right-of-way offers opportunity, several transportation modes may be accommodated (in some cases, in lesser accommodation). The preference is to provide a better quality accommodation by strategically separating travel modes, rather than a network made up of compromises for all modes.

B. MOVEDC INFRASTRUCTURE PLAN

Figures 4.2 through 4.7 show the recommended multimodal infrastructure plan for the District. The infrastructure plan shows elements such as high-capacity surface transit, Metrorail, commuter rail, streetcars, bikeways, managed lanes, new and reconfigured streets, and bridge projects. The plan does not provide specific transportation local transportation network recommendations for such things as local streets (as classified by DDOT), neighborhood bikeways, and neighborhood traffic calming. The Modal Elements provide additional information and recommendations about each modal network and the policies that support moveDC’s envisioned infrastructure.

The recommended plan is focused on specific bounds of the District of Columbia; however, it is mindful of the neighboring region in which it exists. Purposeful connections to existing and planned transit systems, bike and pedestrian networks, rail networks, and vehicular systems are embedded in the recommended plan, along with the many D.C.-focused recommendations. Table 4.1 provides a summary of highlights of moveDC recommendations from a regional integration, system capacity expansion, and network connectivity perspective.

Two sets of maps are included in this chapter: citywide (with downtown inset) and planning area specific. The planning area maps coincide with DDOT’s five designated planning areas—Downtown, Northern, Eastern, Western, and Southern. The geographic extent of each planning area is defined by a combination of significant transportation facilities and coordinated with Ward and Advisory Neighborhood Commission boundaries wherever possible.
FIGURE 4.1: MODAL PRIORITIES
This figure shows conceptual modal priorities on corridors based on infrastructure recommendations in the moveDC Plan.
FIGURE 4.2: PLANNED TRANSPORTATION NETWORK

This figure shows the planned transportation network. Major network elements include a Central Employment Area congestion pricing cordon, support for commuter rail and Metrorail enhancements, managed lanes on major facilities entering the District, a well-connected network of bicycle facilities including new trails and cycle tracks, and sidewalks on at least one side of every street.

Legend

- Quadrant Boundary
- Ward Boundary
- Water
- Park

Existing Infrastructure
- Metrorail Station
- Metrorail Line
- Commuter Rail Station
- Commuter Rail
- Trail
- Bike Lane (incl. Contraflow & Climbing)
- Cycle Track
- Freight Railroad
- Road

moveDC Plan Elements - Future
- Trail
- Bicycle Lane
- Cycle Track
- DC Streetcar (Planned 22-mile Network)
- Streetcar Extension
- High-Capacity Transit (Shared Lanes)
- High-Capacity Transit (Dedicated Space)
- High-Frequency Bus Corridor Improvement

moveDC Plan Elements - Future (continued)
- Water Transit
- Metrorail Line
- Managed Lane
- Roadway Reconfiguration
- Bridge Replacement or Rehabilitation
- Street
- Metrorail Station
- Union Station Improvements
- Central Employment Area Congestion Pricing Cordon
FIGURE 4.3: DOWNTOWN PLANNING AREA TRANSPORTATION NETWORK

The moveDC overall transportation network for the Downtown planning area includes:

- **Transit**
  - Support for commuter rail service expansion, WMATA’s Momentum Plan, and a new Potomac River Metrorail tunnel and downtown Metrorail loop
  - Streetcar Lines: Anacostia Initial Line, North-South, and One City
  - High-Capacity Transit: 16th Street NW, Maine Avenue SW/M Street SW/SE, North Capitol Street, and Woodley Park/U Street NW/Navy Yard
  - Water transit service within the District and between D.C. and neighboring jurisdictions

- **Pedestrian**
  - Sidewalks on at least one side of every street

- **Bicycle**
  - Improved river crossings
  - Improved trail connectivity
  - Many new cycle tracks to and within downtown
  - Extensive bicycle network throughout downtown

- **Vehicular**
  - A Central Employment Area congestion pricing cordon
  - Managed lanes on some of the major facilities entering the District
  - New local street connections in the Foggy Bottom Area and across I-395
  - Preservation of designated freight routes

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**Legend**

- **Existing Infrastructure**
  - Metrorail Station
  - Metrorail Line
  - Commuter Rail Station
  - Commuter Rail
  - Street
  - Railroad
  - Trail
  - Bike Lane (incl. Contraflow & Climbing)
  - Cycle Track

- **moveDC Plan Elements (Future)**
  - Trail
  - Bicycle Lane
  - Cycle Track
  - DC Streetcar (Planned 22-mile Network)
  - Streetcar Extension
  - High-Capacity Transit (Shared Lanes)
  - High-Capacity Transit (Dedicated Space)
  - High-Frequency Bus Corridor Improvement
  - Water Transit
  - Metrorail Line
  - Managed Lane
  - Roadway Reconfiguration
  - Bridge Replacement or Rehabilitation
  - Street
  - Metrorail Station
  - Union Station Improvements
  - Downtown Congestion Pricing Cordon
FIGURE 4.4: EASTERN PLANNING AREA TRANSPORTATION NETWORK

The moveDC overall transportation network for the Eastern planning area includes:

- **Transit**
  - Support for commuter rail service expansion, WMATA’s Momentum Plan, and a new Potomac River Metrorail tunnel and downtown Metrorail loop
  - Streetcar Lines: One City Line
  - High-capacity surface transit: 8th Street NE/SE, Minnesota Avenue NE/SE, Pennsylvania Avenue SE, Rhode Island Avenue NE

- **Pedestrian**
  - Sidewalks on at least one side of every street

- **Bicycle**
  - New bicycle connections over the Anacostia River
  - Improved trail connectivity
  - Cycle tracks on major routes including Alabama Avenue SE, Bladensburg Road NE, East Capitol Street, and Massachusetts Avenue SE
  - Bicycle facilities on Rhode Island Avenue NE

- **Vehicular**
  - Managed lanes on New York Avenue NE
  - Improve/reconfigure the Anacostia Freeway SE (D.C. 295) and the old Southeast Freeway to improve connectivity and safety
  - New local street network in Reservation 13 (Hill East)
  - Extension of Eastern Avenue NE between Bladensburg Road and Kenilworth Avenue
  - Preservation of designated freight routes
FIGURE 4.5: NORTHERN PLANNING AREA TRANSPORTATION NETWORK
The moveDC overall transportation network for the Northern planning area includes:

- **Transit**
  - Streetcar Lines: North-South
  - High-capacity surface transit: North Capitol Street, Woodley Park/U Street NW/Navy Yard, Van Ness/Columbia Heights/Brookland

- **Pedestrian**
  - Sidewalks on at least one side of every street

- **Bicycle**
  - Completion of the Metropolitan Branch Trail
  - New crossings of the Rock Creek Park via a cycle track on Military Road NW and trails
  - Cycle tracks on major routes including Missouri Avenue NW, New Hampshire Avenue NW, and South Dakota Avenue NE

- **Vehicular**
  - New local street grid at the McMillan site and in the Soldier’s and Airmen’s Home area
  - New street crossings of the railroad tracks
  - Preservation of designated freight routes
FIGURE 4.6: SOUTHERN PLANNING AREA TRANSPORTATION NETWORK

The moveDC overall transportation network for the Southern planning area includes:

- **Transit**
  - Support for commuter rail service expansion, WMATA's Momentum Plan, and a new Potomac River Metrorail tunnel and downtown Metrorail loop
  - Streetcar Lines: Anacostia Initial Line with an extension to Congress Heights
  - High-capacity surface transit: Minnesota Avenue SE and South Capitol Street
  - Water transit service within the District and between D.C. and neighboring jurisdictions

- **Pedestrian**
  - Sidewalks on at least one side of every street

- **Bicycle**
  - New bicycle connections over the Anacostia River
  - Improved trail connectivity
  - Cycle tracks on major routes including Alabama Avenue SE, Good Hope Road SE, and Mississippi Avenue SE
  - Bicycle connection from Anacostia to St. Elizabeths

- **Vehicular**
  - Managed lanes on the Anacostia Freeway (I-295) and I-395/I-695
  - Improve/reconfigure the Anacostia Freeway SE (D.C. 295) and the old Southeast Freeway to improve connectivity and safety
  - New local street network in the Skyland area
  - New local street connection between 13th Street SE and St. Elizabeths Hospital redevelopment area
  - Preservation of designated freight routes
FIGURE 4.7: WESTERN PLANNING AREA TRANSPORTATION NETWORK
The moveDC overall transportation network for the Western planning area includes:

- **Transit**
  - Support for a new Potomac River Metrorail tunnel and downtown Metrorail loop
  - Streetcar Lines: One City
  - High-Capacity Transit: Van Ness/Columbia Heights/Brookland, and Wisconsin Avenue NW, and Woodley Park/U Street NW/Navy Yard
  - Water transit service within the District and between D.C. and neighboring jurisdictions

- **Pedestrian**
  - Sidewalks on at least one side of every street

- **Bicycle**
  - New crossings of the Rock Creek Park via a cycle track on Military Road NW and trails
  - Improved trail connectivity
  - New bike bridge between Georgetown and Theodore Roosevelt Island
  - Cycle tracks on major routes including Arizona Avenue NW, Connecticut Avenue NW, K Street NW, and Reservoir Road NW/R Street NW

- **Vehicular**
  - Reconfiguration of the Rock Creek and Potomac Parkway between K Street NW and Q Street NW to accommodate two-way travel all day
  - Preservation of designated freight routes
### Table 4.1: Recommended Network Plan Highlighted Summary

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<thead>
<tr>
<th>Regional Integration</th>
<th>System Capacity Expansion</th>
<th>Network Connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pedestrians</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of sidewalks on at least one side of every street citywide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion of key regional trails (ex. Metropolitan Branch Trail)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support for Union Station enhancements</td>
<td>Support to WMATA in implementation of their Momentum Plan</td>
<td>Planned 22-mile streetcar network with extensions to Silver Spring and Congress Heights</td>
</tr>
<tr>
<td>Support to WMATA in implementing a new Potomac River Metrorail tunnel between Rosslyn &amp; Georgetown and a new downtown Metrorail loop that separates the Orange/Blue Lines and the Yellow/Green Lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water transit within the District and between D.C. and neighboring jurisdictions</td>
<td></td>
<td>Citywide interconnected high-capacity surface transit network</td>
</tr>
<tr>
<td>Efficiency and effectiveness improvement to high-frequency bus corridors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1: Recommended Network Plan Highlighted Summary (continued)

<table>
<thead>
<tr>
<th>Regional Integration</th>
<th>System Capacity Expansion</th>
<th>Network Connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bicycles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected bicycle network (cycle tracks and trails) to and within downtown and across major barriers (parks, rivers, rail, or freeways)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle lanes citywide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional CaBi stations citywide</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vehicles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of Central Employment Area congestion pricing for private vehicle trips</td>
<td>Traffic signal optimization and system enhancement citywide</td>
<td>New local street connections in land use change areas and across barriers such as rail and freeways</td>
</tr>
<tr>
<td>Managed lane network on New York Avenue NE, the Anacostia Freeway (I-295), I-395, I-695, and the Theodore Roosevelt Memorial Bridge (I-66/US 50)</td>
<td>ITS system upgrades citywide</td>
<td>Reconfigurations of freeways into urban boulevards (D.C. 295 and I-66 between Constitution Avenue and K Street NW)</td>
</tr>
<tr>
<td>Major bridge replacements and rehabilitations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preservation of designated freight routes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
IV. Performance of the Plan

The plan goals (described in Chapter 1) were used in the quantitative and qualitative evaluation of the recommended plan’s performance. The Districtwide Travel Demand model and the project’s spatial analysis model were used to develop the metrics for each plan performance measure. The recommended plan’s performance measures and measurement methods were the same as those used in the analysis of the approaches described in Chapter 3.

The recommended plan’s overall performance—by goal category—is summarized by report cards on the following pages. The report cards also show the performance of each of the approaches. Following the report cards are individual summaries of key performance metrics and a summary of the distribution of recommended infrastructure in the District.

The recommended plan’s network takes into account the technical and non-technical input and the trade-offs between different plan goals. The planned network strikes a balance between serving the needs of the city’s residents, a large non-D.C. workforce, and the many people who visit the city. The recommended plan network also coordinates with and connects to infrastructure and policy in neighboring jurisdictions.

The moveDC Plan’s performance reflects its balanced nature—modally, geographically, operationally, and from a policy perspective. It aspires to be simultaneously efficient, effective, and sustainable, while providing comprehensive mobility for the city and interconnectivity to the region.

The goals of moveDC are intended as far-reaching and visionary targets. They are not always possible to measure precisely under future conditions. For example, moveDC adopted the Sustainable D.C. goal of 75 percent of commute trips by non-auto modes.

The Districtwide Travel Demand Model does not distinguish commute versus non-commute trips for all modes. The forecasts prepared as a part of this planning process are for all trips in a 24-hour period. The Districtwide Travel Demand Model projects that the recommended plan would achieve 64 percent of all future (2040) trips in the District by non-auto modes. Because commute trips tend to be more non-auto than others (because transit service is greater and employment density is typically well-served by bicycle facilities), this result still shows substantial progress toward the goals. Future performance monitoring will be needed to evaluate progress on this and other goals, on an ongoing basis.

The forecast mode share principally reflects the effect of the moveDC Plan’s recommended infrastructure on a population and workforce with travel attitudes and behaviors similar to those of today. The many policies in moveDC, policies under consideration by neighboring jurisdictions, and evolving District and regional population attitudes and behaviors toward travel is significantly under-represented in the model results. moveDC’s and the region’s policies, in combination with changing demographics, should push the District’s transportation system nearer to or beyond the established goal.
A. COMPARATIVE REPORT CARD

The recommended plan, like the three approaches, was measured comparatively within each of moveDC’s goal areas. The goals and performance criteria are discussed in more detail in Chapter 1. The charts present a comparative summary of approach performance within each goal area on a representative scale from 0 to 100.

**Sustainability and Health**
Achieve 75% of all commute trips in the District by non-auto modes. We want to promote a healthy lifestyle and sustainable transportation system through the creation of safe places to live, work, and play. Providing for today’s needs without negatively impacting the ability of future generations to do the same is important.

- A higher rating means: The transportation system helps to promote an environmentally friendly and healthy lifestyle
- The moveDC Plan is equal to the performance of Approach 3 (Connect the Neighborhoods), having the highest score by increasing non-auto mode share, while limiting new transportation infrastructure in flood zones

**Citywide Accessibility and Mobility**
Maximize system reliability and capacity for moving people and goods. Maintaining connectivity and accessibility in a diversity of ways (driving, public transportation, walking, and biking), while also accommodating freight movements within and through the District is important. Connections to regional transportation facilities are important in providing access into and out of the city.

- A higher rating means: That it is easier to get in and around the city.
- The moveDC Plan compares favorably with the three approaches. It increases system capacity and integrates with the regional transportation system
Neighborhood Accessibility and Connectivity
Support neighborhood vitality and economic development. Enhanced connectivity and improved transit service can contribute to neighborhood vitality. These investments can reduce travel time and cost for people and also encourage economic development.

- A higher rating means: There are more connections between District neighborhoods and activity centers
- The moveDC Plan performs better than the three approaches by increasing network coverage and transportation access

Safety and Security
Achieve zero fatalities and serious injuries on the District transportation network. The transportation system can contribute to safety and security by providing enhanced accommodations for walking, bicycling, driving, and transit. Sidewalks and accommodation for emergency evacuation are considerations within this category.

- A higher rating means: The transportation system will be safer
- The moveDC Plan compares favorably with the three approaches due to planned corridor improvements in high crash locations and increasing transportation capacity on evacuation routes

Approach 1: Stay the Course
Approach 2: Get to the Center
Approach 3: Connect the Neighborhoods
moveDC Plan
Public Space
Reinforce Washington, D.C.’s historic landscapes and quality of neighborhood public space. Washington, D.C.’s historic and cultural features in combination with its distinct neighborhoods and public spaces contribute to the District’s unique identity. World class cities are defined not only by their great spaces, but also by the corridors that connect them. Streets should be attractive and walkable.

- A higher rating means: Streets are more attractive and walkable
- The moveDC Plan compares favorably with the three approaches due to the opportunity to improve streetscapes and enhance the public realm through its infrastructure investments

Preservation
Maximize reliability for all District transportation infrastructure by investing in maintenance and asset management. Infrastructure is aging in the District and will need continued investment. There is a need to balance maintenance and transportation system enhancements to ensure that the transportation system can achieve a “state of good repair.”

- A higher rating means: A lesser amount of infrastructure is added to the transportation system, requiring relatively comparatively less financial resources to maintain
- The moveDC Plan compares favorably with the three approaches because it efficiently deploys high-cost infrastructure such as streetcar and high-capacity surface transit and rehabilitates the District’s bridge infrastructure
B. MOVEDC PLAN PERFORMANCE

Transportation Options
With the recommended transportation networks, downtown is well-served while many other neighborhoods also benefit from new transportation choices. In addition, neighborhoods along some major travel corridors enjoy nearly as much transportation choice as downtown.

By 2040, this percent of the District population will have access to:

- Sidewalk
- Designated Bike
- Protected Bike
- High Capacity Transit
- Metrorail

Figure 4.8: moveDC Mobility Index Summary

Legend
- Mobility Index
  - Low Mobility
  - High Mobility
- Metrorail Line
- School
- Hospital
**Mode Share for Daily Trips**

The recommended plan anticipates that trips with a starting and ending point in the District in 2040 will occur primarily on foot and by bicycle. Compared to the three approaches studied, the recommended plan anticipates a slightly smaller number of trips to be made by transit.

**Mode Share for Trips within the District (District to District)**

How does the recommended plan’s performance compare with the 75% non-auto mode share goal?

moveDC’s mode share goal, incorporated from Sustainable D.C., is for commute trips only. The Districtwide Travel Demand Model does not distinguish between commute and non-commute trips for all travel modes. The summary presented on this page is for all trips in a 24-hour period. Non-commute trips tend to have a higher driving share. Ongoing evaluation of the District’s progress toward the Sustainable D.C. and moveDC goal will need to be conducted using U.S. Census information and household travel survey data taken at the regional level.

**Mode Share for Trips to or from the District**

Trips with either a starting or ending point in D.C. in 2040 are anticipated to be made at a higher rate by transit, as compared to District-to-District trips.
Capacity to Move People
Compared to today (2014), there will be significantly more person-carrying capacity in the District’s future (2040) transportation system. Automobile capacity will decrease slightly to provide space for other modal networks to experience a substantial increase in capacity. The recommended plan network capacity compares favorably to the other approaches studied.

Bike/Walk Network
The District will continue to invest in bicycling and walking facilities. By 2040, sidewalks will be available on at least one side of every street and many more bikeways will be constructed. The graphic shows the size of the system planned. The recommended plan bicycle network compares favorably to the three alternative approaches.

Transit Access
By 2040, approximately 22 percent and 45 percent of the percent of the District’s population will have access to a Metrorail station or a high-capacity surface transit (including streetcar) stop, respectively. The availability of high-capacity surface transit is less than the three alternative approaches due to the smaller network recommended in the moveDC Plan.

Parking
In the future, peak period on-street parking restrictions will be determined on a case-by-case basis as other modal facilities are implemented in a corridor.
Vehicular Network Operation

The recommended plan reduces vehicular capacity on many corridors to the benefit of a significant increase in person-carrying capacity of the network. As shown in Chapter 2, in the future baseline (2040) scenario, the number of vehicle trips, miles and hours traveled, and delay increases substantially from existing (2010) modeled conditions.

As it relates to a visual comparison of performance between the future (2040) baseline (Figures 4.9) and recommended plan scenario (Figure 4.10), the difference is subtle—principally attributable to the nature of how the volume to capacity ratio (V/C) data is shown. In analytic terms, the difference in performance between the future (2040) baseline scenario and recommended plan is substantial.

Tables 4.2 through 4.6 summarize system performance. As shown in Table 4.2, when compared to existing (2010) modeled conditions, the recommended plan results in potentially fewer vehicle miles traveled and only a slight increase in vehicle hours traveled (5.5%) and delay (9.5%) for District-to-District trips. Similarly, moveDC’s multimodal investments help to reduce the scale of the increase in vehicular travel between the District and the region. The performance noted above is in the context of the forecasted increase in population of nearly 50 percent in the District and an increase in jobs in the District by more than 27 percent.

Tables 4.5 and 4.6 show the effect of moveDC’s coordinated and comprehensive multimodal investment approach in the form of significant decreases in motorized (drive) mode share and corresponding increases in transit and non-motorized (walk/bike) mode share.

Table 4.2: V/C Ratio

<table>
<thead>
<tr>
<th>V/C Ratio</th>
<th>Peak Hour Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 to 0.75</td>
<td>15,000</td>
</tr>
<tr>
<td>0.75 to 1.50</td>
<td>7500</td>
</tr>
<tr>
<td>1.50 to 1.75</td>
<td>3750</td>
</tr>
</tbody>
</table>

Figure 4.9: 2040 Future Baseline p.m. Peak Hour Volume to Capacity (V/C) Ratios

Figure 4.10: 2040 Recommended Plan p.m. Peak Hour V/C Ratios
### Table 4.2: Vehicular System Performance

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
<th>moveDC Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td>Vehicle Miles Traveled (VMT)</td>
<td>9.13 million</td>
<td>10.45 million</td>
<td>9.07 million</td>
</tr>
<tr>
<td>Vehicle Hours Traveled (VHT)</td>
<td>335,000</td>
<td>389,000</td>
<td>354,000</td>
</tr>
<tr>
<td>Delay (Hours)</td>
<td>21,000</td>
<td>30,000</td>
<td>23,000</td>
</tr>
</tbody>
</table>

Note: These values are for the District of Columbia only

### Table 4.3: Total Daily (District-to-District) Trips

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
<th>moveDC Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td>Motorized (Drive)</td>
<td>639,000</td>
<td>756,000</td>
<td>654,000</td>
</tr>
<tr>
<td>Transit</td>
<td>314,000</td>
<td>384,000</td>
<td>427,000</td>
</tr>
<tr>
<td>Non-Motorized (Walk/Bike)</td>
<td>450,000</td>
<td>698,000</td>
<td>747,000</td>
</tr>
</tbody>
</table>

Notes:
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit

### Table 4.4: Total Daily (to/from District) Trips

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
<th>moveDC Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td>Motorized (Drive)</td>
<td>1,305,000</td>
<td>1,480,000</td>
<td>1,340,000</td>
</tr>
<tr>
<td>Transit</td>
<td>486,000</td>
<td>615,000</td>
<td>685,000</td>
</tr>
<tr>
<td>Non-Motorized (Walk/Bike)</td>
<td>200,000</td>
<td>229,000</td>
<td>244,000</td>
</tr>
</tbody>
</table>

Notes:
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit
### Table 4.5: Mode Share (District-to-District) Trips

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
<th>moveDC Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td>Motorized (Drive)</td>
<td>45.5%</td>
<td>41.1%</td>
<td>35.8%</td>
</tr>
<tr>
<td>Transit</td>
<td>22.4%</td>
<td>20.9%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Non-Motorized (Walk/Bike)</td>
<td>32.1%</td>
<td>38.0%</td>
<td>40.9%</td>
</tr>
</tbody>
</table>

**Notes:**
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles.
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit.
3. Columns may not total 100% due to rounding.

### Table 4.6: Mode Share (to/from District) Trips

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Base Year</th>
<th>Future Baseline</th>
<th>moveDC Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2040</td>
<td>2040</td>
</tr>
<tr>
<td>Motorized (Drive)</td>
<td>65.6%</td>
<td>64.7%</td>
<td>58.8%</td>
</tr>
<tr>
<td>Transit</td>
<td>24.4%</td>
<td>26.9%</td>
<td>30.5%</td>
</tr>
<tr>
<td>Non-Motorized (Walk/Bike)</td>
<td>10.0%</td>
<td>10.0%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

**Notes:**
1. Motorized includes private vehicle (driver and passenger) and commercial vehicles.
2. Transit is bus, streetcar, high-capacity surface transit, Metrorail, commuter rail, and water transit.
3. Columns may not total 100% due to rounding.
Distribution of Investment

Early in the planning process, the themes of sharing prosperity and creating an environment that allows neighborhoods to flourish were identified as important. Transportation’s role in supporting and enriching neighborhoods is considerable. It ranges from offering people access to the places they need to go, when they need to go there to enriching the physical and economic environment through improvements to public space.

Similarly, transportation is a key component of a strategy to better share prosperity. When a transportation system offers people a range of choices that allow them to get where they need to go, when they need to go there in a way that aligns with their needs (financially, schedule, convenience, and other), it in turn offers those people opportunity to achieve their fullest potential.

Potentially vulnerable populations, from a demographic perspective, often are those that could most benefit from improved access, more transportation choice, and community investment. Recognizing this, the distribution of recommended transportation infrastructure of moveDC was evaluated.

Through the use of demographic data from the 2010 U.S. Census, areas with high concentrations (relative to Districtwide averages) of potentially vulnerable populations were identified and are shown in Figure 4.12. The identification of these areas is based on Census Tract data and there may be other areas with potentially vulnerable populations that are not highlighted.

The purpose for identifying potentially vulnerable populations was to evaluate the impact and potential benefit of plan infrastructure recommendations on transportation access and mobility choice in these areas, relative to the District as a whole. As projects are developed from the moveDC Plan’s recommendations, additional analysis and evaluation will be important to ensuring that populations in these areas, as well as others, are not subjected to disproportionate negative impacts.

Figure 4.12 shows areas of the city with population groups that may benefit from increased, or at least, reasonable transportation investment. These areas, shown in orange and red in Figure 4.12, comprise approximately 40 percent of the population.

The following briefly summarizes major transportation investments (numbers are approximate) in areas with potentially higher concentrations (shown in orange and red) of vulnerable populations:

- 33% of plan recommended bike lanes
- 34% of plan recommended cycle track
- 37% of plan recommended new trails
- 46% of plan recommended new street connections
- 49% of plan recommended streetcar mileage
- 36% of plan recommended high-capacity transit mileage (includes streetcar)

Figure 4.11 shows comparative summary of transportation access for the city as a whole versus the areas shown in red and orange. As shown in the figure, the areas with potentially vulnerable populations have a similar level of transportation choices available as the city as a whole.
V. The Plan and Modal Elements

The recommended plan will provide tremendous multimodal mobility for the District’s residents, workers, and visitors, regardless of age or ability. It also will benefit the region’s transportation system by making key connections, strategically increasing capacity, and diversifying the system. Detailed recommendations for each of moveDC’s modal elements are described in the chapters that follow. Chapter 5 (Implementation) provides insight into long-term transportation finance, plan priorities, and tools for implementing moveDC’s transportation vision.
FiguRe 4.12: PoTEnTially vulneraBle popuLaTions
This map shows a summary of higher concentrations of (relative to one another) Title VI designated populations in the District. The analysis was prepared using demographic data from the U.S. Census (2010) at the Tract level as noted in the map legend.

Legend
- Quadrant Boundary
- Existing Infrastructure
  - Railroad
  - Road
- Title VI Population Index
  - Very Low Concentration
  - Very High Concentration

Title VI Population Index includes:
- Minority (Race & Color)
- National Origin
- Income
- Limited English Proficiency (LEP)

Data Source: 2010 United States Census
The ultimate goal of moveDC is to bring its recommendations to reality to support the city’s continued growth and prosperity (P Street NW reconstruction).
CHAPTER 5: Implementation

I. Vision to Reality
moveDC is a long-term plan for a reason: achieving its full vision will require decades of investment and continued commitment from city leaders and support from innumerable local and regional partners. The return on the city’s investment of time and funds spent implementing moveDC will be stronger, more vital neighborhoods; sharing prosperity among all of the city’s residents; meeting our responsibility to the environment; and making the District more competitive among its domestic and global peers. As outlined in the performance section of Chapter 4, Policy and Planning Framework, the full implementation of moveDC will incorporate planned growth and result in better multimodal access across the District, while accommodating all of the trips that are being made in the District today.

This chapter provides guidance for prioritizing and implementing moveDC’s recommendations in order to get from the present day to the future vision. To provide perspective to the user of this document, this chapter also outlines the District’s budgeting approach and long-term financial (cost and revenue) projections for transportation.

II. Using this Plan
The moveDC plan is intended to be a starting point for coordinated transportation investments for the District in the next 25+ years. It presents needed and realistic multimodal transportation network investments and policy concepts that, together, help achieve the goals established as a part of the planning process. moveDC does not present specific and final design solutions, nor has the plan analyzed all of the tradeoffs for individual components of the plan, instead focusing on a system-level analysis. These first five chapters have described the moveDC plan development process, the citywide vision and expected performance, and now the pathway to implementation. The Modal Elements focus on individual transportation modes and provide details on recommended investments, policies, and initiatives. There are ways for various stakeholders to use moveDC:

- **For residents or stakeholders representing a specific area of the District,** Chapter 4, “Policy and Planning Framework,” identified the specific investments recommended for the District as a whole and for individual geographies (presented by DDOT’s planning areas). This chapter presents the recommended phasing and investment approaches to achieving the buildout of that system in all parts of the District.
- **For advocates or users of a specific mode,** the Modal Elements provide a cohesive vision for each mode, and these elements can be read as stand-alone “master plans” for each mode. Each modal element, though, may need to be considered in relation to other chapters, due to the multimodal focus of the planning process.
- **For policymakers,** each modal chapter details recommended policies as they relate to each mode, which in some cases repeat in multiple chapters. The moveDC Policy Guide (Appendix 4.1) also consolidates all recommended policies in a cohesive policy guide.
Each Modal Element also contains a specific implementation section with key investments and next steps identified. The final section of this chapter identifies recommended next steps at the citywide and comprehensive scale.

moveDC will need to be updated periodically to take into account the many changes the future will bring that cannot be anticipated today. The need for updates is the recognition that some things always change in a city as dynamic as Washington, D.C. Financial, political, and demographic trends all result in changing demands on the transportation system in the District and the region as a whole. In 1997, when the last long-range vision plan, Transportation Plan for the District of Columbia, was completed, few could have predicted the rapid population growth of the past few years, the large scale deployment of a regional bikesharing program, or countless other developments of the past 17 years. Some changes, such as renewed investment in transit, components of the District’s trail system, and the expansion of bike facilities were accurately envisioned all those years ago. Finally, some elements of moveDC, as with the 1997 plan, may not become reality. Regular updates will help ensure the long-range plan continues to make sense in the context of changing short-range demands on the system.

III. Developing Projects

A. THE PROJECT DEVELOPMENT PROCESS

Some of the infrastructure recommendations included in moveDC are already in the design process or ready for construction; however, the vast majority of moveDC’s recommendations will need to undergo additional evaluation and further development—consistent with established city processes—prior to their implementation. The District Department of Transportation Environmental Manual, 2nd Edition (2012) further describes the steps shown in Figure 5.1. Some moveDC recommendations are at various stages of this process today.

The additional evaluation and development processes may adjust the character, location, and other elements of some recommendations. This is a natural evolution of long-range plan-identified recommendations as they move toward implementation.

Figure 5.1: Project Development Process

<table>
<thead>
<tr>
<th>STEP</th>
<th>PURPOSE</th>
<th>TRANSPORTATION PLANNING</th>
<th>PLANNING STUDIES, PE, AND ENVIRONMENTAL STUDIES</th>
<th>FINAL DESIGN</th>
<th>CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Identify need</td>
<td>Identify specific solution</td>
<td>Develop design plan and specifications</td>
<td>Deliver project</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Vision Plan (moveDC)</td>
<td>Planning Study</td>
<td>Final Design</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>CLRP</td>
<td>Preliminary Engineering</td>
<td>Right-of-way Acquisition</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>STIP</td>
<td>Environmental Analysis &amp; Documentation</td>
<td>Construction</td>
<td>Inspection</td>
</tr>
</tbody>
</table>

Note: Adapted from District Department of Transportation, Environmental Manual (2nd Edition, 2012); Chapter 3, Project Development Process (page 37)
B. PARTNER ORGANIZATIONS
Not all recommendations identified in moveDC will be the sole implementation responsibility of DDOT. For most recommendations, DDOT will be the lead agency, working in coordination with other District agencies and stakeholders outside of District government, including the Washington Metropolitan Area Transit Authority (WMATA), National Park Service, the Architect of the Capitol, the Metropolitan Washington Council of Governments (MWCOG), and partners in the region. In some instances, DDOT will act in a support role to another District, non-District, or non-governmental agency or organization, and implementation may be at the discretion of those partner agencies. Wherever possible, moveDC attempted to identify both DDOT-led projects or initiatives and those that must be led by others with a supportive role for DDOT.

IV. Financial Plan

A. ESTIMATED PLAN COST
moveDC infrastructure, program, education, and enforcement recommendations were developed for pedestrian, bicycle, transit, vehicular, transportation demand management (TDM), parking, and freight modes. The planning-level cost estimates take moveDC infrastructure recommendations into account and also reflect projects committed in the 2014-2020 Regional Transportation Improvement Plan (TIP), ongoing maintenance and operational responsibilities, and the District’s share of WMATA costs.

All costs discussed in this section were developed and evaluated in current year (2014) dollars. Because of the nature of long range planning, all program and infrastructure costs should be reevaluated in future project development activities. Table 5.1 shows estimated costs for capital investments, programs, and asset management. Cost by recommendation type is described in further detail below.

Capital Investments
Capital investments are identified in moveDC or the TIP and generally have specifics that define their extent, the type of infrastructure (bridge, street, etc.), and action planned (reconstruction, replacement, etc.). With respect to the planning-level cost estimates shown in Table 5.1, the following were generally assumed:

- Wherever possible, the cost estimates utilized project-specific costs, including costs from MWCOG’s FY13-19 TIP, the FY14-20 District Budget, and other project-specific estimates such as the 22-mile Priority Streetcar System
- Additional costs for moveDC recommendations were estimated using a generalized unit cost related to infrastructure type. The unit costs were derived from existing District costs
- Values represent future costs and do not reflect monies already spent on project development
- The District’s financial responsibility to WMATA’s capital program was taken from WMATA’s Draft November 2013 CLRP Submission to MWCOG, which included a similar level of investment to that contained in moveDC

Programs
In the context of the implementation plan for moveDC, the term program is used to describe ongoing funding commitments for, operations, education, maintenance, regular infrastructure improvements that are not defined as projects, or other items, such as debt service on Grant Anticipation Revenue Vehicle (GARVEE) bonds. Examples of infrastructure programs include those associated with streetlight improvements, traffic signals, and bike rack installations. Examples of operations include transit services, including WMATA operating costs and operating variable lane change activity. With respect to the planning-level cost estimates shown in Table 5.1, the following were generally assumed:

- Costs from existing DDOT programs were forecast into the future at an equivalent level
- Streetcar operating and maintenance costs took into account the most current forecasts available
- Values represent future costs and do not reflect monies already spent on project development
- The District’s financial responsibility to WMATA’s operating and maintenance costs was taken from WMATA’s Draft November 2013 CLRP Submission to MWCOG, which included a similar level of investment to that contained in moveDC
- GARVEE bond debt service was forecast based on existing commitments and project-specific
estimates for the 11th Street and South Capitol Street bridge projects.

**Asset Management**

Costs within this area of moveDC include ongoing assessments, maintenance, and repairs of transportation infrastructure. Asset management costs include regular bridge maintenance, but not major bridge replacement projects such as that planned for South Capitol Street. With respect to the planning-level cost estimates shown in Table 5.1, the following were generally assumed:

- Costs for current maintenance activities were forecast into the future at an equivalent level, except under the following circumstances:
  - Additional maintenance is needed to achieve a state of good repair. An annual additional increment of cost was assumed to increase funding allocated to state of good repair for streets and sidewalks.
  - Additional infrastructure is added as a result of moveDC recommendations, which will result in a need for additional maintenance. Additional cost, proportional to the increase in infrastructure was included in the planning-level costs.
  - Some costs for transit maintenance are included in the program planning-level cost estimate.

**Table 5.1: moveDC Planning-Level Cost Forecast**

<table>
<thead>
<tr>
<th>Source</th>
<th>Net Present Cost (2014–2040)</th>
<th>Average Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Investments</td>
<td>$18.9 B</td>
<td>$699 M</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>$60 M</td>
<td>$2.2 M</td>
</tr>
<tr>
<td>Bicycle &amp; Trail</td>
<td>$290 M</td>
<td>$11 M</td>
</tr>
<tr>
<td>Transit (DDOT)</td>
<td>$3,318 M</td>
<td>$123 M</td>
</tr>
<tr>
<td>Transit (WMATA)</td>
<td>$9,971 M</td>
<td>$369 M</td>
</tr>
<tr>
<td>Vehicle</td>
<td>$5,224 M</td>
<td>$193 M</td>
</tr>
<tr>
<td>Parking</td>
<td>$20 M</td>
<td>$0.7 M</td>
</tr>
<tr>
<td>Programs</td>
<td>$23.8 B</td>
<td>$883 M</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>$70 M</td>
<td>$2.6 M</td>
</tr>
<tr>
<td>Bicycle &amp; Trail</td>
<td>$15 M</td>
<td>$0.6 M</td>
</tr>
<tr>
<td>Transit (DDOT)</td>
<td>$5,455 M</td>
<td>$202 M</td>
</tr>
<tr>
<td>Transit (WMATA)</td>
<td>$14,035 M</td>
<td>$520 M</td>
</tr>
<tr>
<td>Vehicle</td>
<td>$4,132 M</td>
<td>$153 M</td>
</tr>
<tr>
<td>Freight</td>
<td>$7 M</td>
<td>$0.3 M</td>
</tr>
<tr>
<td>Parking</td>
<td>$121 M</td>
<td>$4.5 M</td>
</tr>
<tr>
<td>Asset Management</td>
<td>$11.2 B</td>
<td>$413 M</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>$160 M</td>
<td>$5.9 M</td>
</tr>
<tr>
<td>Bicycle &amp; Trail</td>
<td>$87 M</td>
<td>$3.2 M</td>
</tr>
<tr>
<td>Vehicle</td>
<td>$5,164 M</td>
<td>$192 M</td>
</tr>
<tr>
<td>Transit (DDOT)</td>
<td>$494 M</td>
<td>$18 M</td>
</tr>
<tr>
<td>Transit (WMATA)</td>
<td>$5,246 M</td>
<td>$194 M</td>
</tr>
<tr>
<td>Total</td>
<td>$53.9 B</td>
<td>$1.995 B</td>
</tr>
</tbody>
</table>

Note:
1. Planning-level cost forecasts are in 2014 dollars.
2. Committed expenses for Fiscal Year 2014 do not match the average annual cost.
3. Vehicle costs include intelligent transportation systems (ITS), bridges, and tunnels.
4. Program transit costs include some maintenance costs.

**Present value** identifies the value of money at today’s point in time. When there is inflation, $1 today is worth more than $1 a year from now. **Net present cost** refers to the current cost of a future series of expenses. **Net present value** refers to the current value of a series of cash flows; in this case funding is estimated in 2014 dollars.
B. EXISTING AND POTENTIAL REVENUES

Fully realizing moveDC’s vision will require an estimated investment of more than $50 billion (2014 dollars) during the next 27 years. To support moveDC’s ambitious recommendations, considerable revenue from many different sources will be needed.

The financial plan underlying moveDC includes a combination of revenue sources that are traditional (or “committed”) and sources that are non-traditional (or “potential”). Traditional sources are those that have been used to fund transportation in the past and have easily predictable funding levels for the future. Non-traditional sources are those that may not be as available or predictable. The following sections briefly describe revenue sources that were evaluated in the development of the financial plan.

Committed Revenue Sources

These revenues consist of existing funding that is expected to continue for the planning period—2014 to 2040. The present value of these funds amounts to approximately $20.8 billion, about 40 percent of the funds required to meet the costs of the proposed recommendations in moveDC.

To develop the revenue forecast, moveDC evaluated each committed revenue source and estimated the reasonably expected amount of funding for the period. The committed revenue sources consist of the following:

- **Federal Highway Administration (FHWA) Funds and the D.C. Highway Trust Fund.** Considered a state Department of Transportation by the federal government, the District receives a direct annual apportionment of FHWA funds, subject to appropriation by Congress. These funds generally require a local match, which the District funds from the D.C. Highway Trust Fund. This revenue category includes the projected amount of federal transportation funds allocated to the District as well as the local match required to use these funds. This match is assumed to average 22 percent of the federal allocation, consistent with current District budgeting practices. In the committed funding evaluation, moveDC does not assume an annual increase in revenue from this funding source due recent history in federal funding levels (no federal gas tax increase or funding level since 1993). This is a conservative, but smart, approach to forecasting future federal appropriations.

- **D.C. Local Funds.** Some District revenue (not related to the Highway Trust Fund) was assumed to be committed for transportation during the planning period. The future commitment of these funds assumes that future Mayors and City Councils will continue to allocate funds for this purpose over time. The District’s current local funding practice involves annual appropriations as a part of the regular District government budget development process. These funds were assumed to stay consistent with the funding levels in the District’s FY14-19 Budget, assuming funding levels would keep up with inflation.

- **Streetcar “PayGo” Funding.** The District has designated 25 percent of the increase in all District local revenue from 2017 to 2025 (estimated) to be used to pay for the currently planned 22 miles of the D.C. Streetcar program. An extension of this funding source beyond 2025 is further discussed in Potential Revenue Sources below.

- **WMATA Funding.** The financial plan includes funds committed by the District to support its share of WMATA capital and operating expenses over the life of moveDC. The estimates are based on current funding levels, assuming funding levels would keep up with inflation, and do not assume major service changes or major capital investments beyond the commitments to State of Good Repair funding that WMATA and member jurisdictions have made over the past several years.

- **Transit Revenues from non-WMATA Activities.** The financial plan includes estimated current and future revenues from transit operations in the District including:
  - Circulator - farebox and ancillary revenues
  - Streetcar - farebox and ancillary revenues
  - Federal (FTA) funding (operating assistance)
The forecast for committed revenues is shown in Table 5.2. The forecast reflects the net present value of revenue in the years 2014 through 2040. As to the revenues shown in Table 5.2, the following are generally assumed:

- Plan base year: 2014
- Inflation rate: 2.5% per year
- Federal funding annual growth rate: 0% for committed sources (1.5% per year for prospective/potential sources)
- Local funding growth rate: 2.5% per year

### Potential Revenue Sources

Committed sources of funding will be inadequate to support the full implementation of moveDC; therefore, moveDC identified and evaluated potential additional revenue sources in detail sufficient to produce planning-level revenue estimates. None of these sources have been committed and each may have challenges in implementation. To assess the potential gap in “committed” and “potential” funds, moveDC assessed the potential for the implementation of each potential source as “high,” “moderate,” or “low.” These assessments are based on the level of complexity in implementing any potential source of revenue. Any new source of revenue would need to go through the legislative process in the District and there may be additional potential sources not assessed through this process. The following briefly describes potential sources of funding and anticipated revenue generated by these sources:

#### High Potential

- **Increases in FHWA Funds and D.C. Highway Trust Fund.** Federal funding levels have not kept up with inflation, and federal revenues for transportation have not been increased in two decades; however, there is a high potential that over the course of moveDC, additional federal funds are made available to state and local agencies for purposes such as maintenance and asset management. As it relates to potential revenue evaluations, moveDC assumes an annual increase of 1.5 percent in federal funds and the corresponding local match, which is still not keeping pace fully with inflation, but would provide some additional funds. Additional commitments of local match funds could also be included in this category. Potential new revenue of $730 million (present value) between 2014 and 2040.

#### Table 5.2: Committed Revenue Forecast (2014–2040)

<table>
<thead>
<tr>
<th>Source</th>
<th>Net Present Value (2014–2040)</th>
<th>Average Annual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Committed Funds</strong></td>
<td>$21.5 B</td>
<td>$798 M</td>
</tr>
<tr>
<td>FHWA &amp; D.C. Highway Trust Fund</td>
<td>$4,213 M</td>
<td>$156 M</td>
</tr>
<tr>
<td>D.C. Local</td>
<td>$4,146 M</td>
<td>$154 M</td>
</tr>
<tr>
<td>Streetcar PayGo</td>
<td>$1,671 M</td>
<td>$62 M</td>
</tr>
<tr>
<td>WMATA</td>
<td>$10,907 M</td>
<td>$404 M</td>
</tr>
<tr>
<td>Non-WMATA Transit Revenues</td>
<td>$697 M</td>
<td>$26 M</td>
</tr>
<tr>
<td>Estimated Plan Cost</td>
<td>$53.9 B</td>
<td>$1,995 M</td>
</tr>
<tr>
<td><strong>Gap with Committed Funds</strong></td>
<td>$32.4 B</td>
<td>$1,197 M</td>
</tr>
</tbody>
</table>

Notes:
1. Planning-level cost and revenue forecasts are in 2014 dollars
2. Committed revenues for Fiscal Year 2014 do not match the average annual value

- **Transit Revenues.** moveDC evaluated an expansion of incremental revenues related to the District’s High Capacity Transit (HCT) system in similar categories to the committed funds. As the District continues to build out the transit system, these revenues can be reasonably assumed:
  - HCT - farebox and ancillary revenues.
  - Federal (FTA) funding (operating assistance) for HCT projects
  - Potential new revenue of $128.8 million (present value) between 2014 and 2040.
Moderate Potential

- **Bus Shelter Advertising.** moveDC forecasts an increase in revenue from the sale of advertising space in the District’s bus shelters when the current agreement expires in 2025. Plan revenue estimates assume that the additional advertising revenues could be dedicated to transportation and would be in line with the funding levels under the current bus shelter agreement. This may be a conservative estimate, as future contracts for these facilities may not require as much capital investment in new shelters as was included in the current agreement. Potential new revenue of $104 million (present value) between 2026 and 2040.

- **Continuation of the Streetcar “PayGo” Local Revenue Increment.** As described in committed revenue sources, the District has currently dedicated 25 percent of the increase in all District revenues to the streetcar program between 2017 and 2025 (or until the system is substantially complete). In addition to these committed revenues, moveDC forecasts a continuation of the designation of 25 percent of the increase in all District local revenue to transportation over the planning period (to 2040). As evaluated, this revenue source has the potential to generate approximately $23.6 billion (present value) during the planning period and would be dedicated to transportation. This revenue source would not involve any tax increase, merely a dedication of the incremental growth in revenues to transportation purposes. Something less than the full amount may be possible, too, and so this source has been evaluated as having “moderate” potential.

Low Potential

- **Sales Surtax.** moveDC forecasts the potential for a 0.25 percent increase in the general sales tax, resulting in a total sales tax of 6 percent with a start date of 2016. Between 2016 and 2040, this source would generate $496 million (present value). Plan revenue estimates assume that the sales surtax would be dedicated to transportation. Increasing taxes is generally an unpopular concept in the abstract, so this potential revenue source may need to be tied to specific investments to generate political support, and is thus included as a moderate potential for implementation.

- **Cordon Charge.** In the context of moveDC, this revenue source is related to the establishment of a “cordon area” in a portion of downtown D.C. to manage the demand for single-occupancy vehicle access to the downtown area, reduce congestion, and create capacity on downtown streets for multimodal needs. For the purposes of revenue forecasting and the analysis conducted during the planning process, the cordon area was defined as the Central Employment Area as shown in Figure 5.2. Revenue would be generated through fees collected from vehicles entering, exiting, etc.
CHAPTER 5: IMPLEMENTATION

or operating within this area during designated periods of the day. This is similar to the charge currently in effect for an area of downtown London and could exempt high-occupancy vehicles. As evaluated, assuming a fee for single-occupancy vehicles similar to the highest round trip Metrorail fare (or approximately $11/day), this revenue source has the potential to generate approximately $4.4 billion (present value) between 2021 and 2040. moveDC revenue estimates assume that cordon charge revenues would be dedicated to transportation, but the forecast assumes that the fee would not begin until 2021. Still, this potential revenue source would have many political and logistical hurdles to overcome, and so for the purposes of this forecast, has been deemed to have “low” potential.

Revenue forecasts for potential funding sources for moveDC are shown in Table 5.3. A summary of committed and potential funds along with estimated plan cost is shown in Table 5.4. The forecasts shown represent the net present value of identified revenues between 2014 and 2040.

Table 5.3: Total Revenue Forecast (2014–2040)

<table>
<thead>
<tr>
<th>Source</th>
<th>Net Present Value (2014–2040)</th>
<th>Average Annual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Potential</td>
<td>$859 M</td>
<td>$32 M</td>
</tr>
<tr>
<td>Increase in FHWA &amp; D.C. Highway Trust Fund</td>
<td>$730 M</td>
<td>$27 M</td>
</tr>
<tr>
<td>Transit Revenues</td>
<td>$129</td>
<td>$5 M</td>
</tr>
<tr>
<td>Moderate Potential</td>
<td>$23,730 M</td>
<td>$879 M</td>
</tr>
<tr>
<td>Bus Shelter Advertising</td>
<td>$104 M</td>
<td>$4 M</td>
</tr>
<tr>
<td>Continuation of Streetcar “Pay Go” Tax Increment and Expansion to Other Transportation Investments</td>
<td>$23,626 M</td>
<td>$875 M</td>
</tr>
<tr>
<td>Low Potential</td>
<td>$4,936 M</td>
<td>$183 M</td>
</tr>
<tr>
<td>Sales Surtax</td>
<td>$496 M</td>
<td>$18 M</td>
</tr>
<tr>
<td>Cordon Charge</td>
<td>$4,440 M</td>
<td>$165 M</td>
</tr>
<tr>
<td><strong>Total Potential Funds</strong></td>
<td><strong>$29.5 B</strong></td>
<td><strong>$1,094 M</strong></td>
</tr>
<tr>
<td>Estimated Plan Cost</td>
<td><strong>$53.9 B</strong></td>
<td><strong>$1,995 M</strong></td>
</tr>
</tbody>
</table>

Table 5.4: Cost and Revenue Summary (2014–2040)

<table>
<thead>
<tr>
<th>Source</th>
<th>Net Present Value (2014–2040)</th>
<th>Average Annual Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Plan Cost</td>
<td>$53.9 B</td>
<td>$1,995 M</td>
</tr>
<tr>
<td>Committed Funds</td>
<td>$21.5 B</td>
<td>$798 M</td>
</tr>
<tr>
<td>Gap with Committed Funds</td>
<td>$32.4 B</td>
<td>$1,197 M</td>
</tr>
<tr>
<td>Potential Funds</td>
<td>$29.5 B</td>
<td>$1,094 M</td>
</tr>
<tr>
<td>Gap with Committed + Potential Funds</td>
<td>$2.9 B</td>
<td>$103 M</td>
</tr>
</tbody>
</table>

Notes:
1. Planning-level cost and revenue forecasts are in 2014 dollars
2. Committed revenues for Fiscal Year 2014 do not match the average annual value
3. Potential revenues are estimated based on the best-available information at a long-range planning level of detail
The recommendations contained in moveDC will be subject to the District and DDOT’s budgeting process and the availability of funding. Some individual recommendations and projects also may depend on funding from or in cooperation with regional partners. Several processes guide DDOT’s operating budget and 6-year capital programs, which in turn guide DDOT’s annual work program.

- The District of Columbia annually produces a 6-year capital improvements program as well as an annual operating budget. This process results in the appropriation of funds for three components of moveDC implementation:
  - DDOT’s local capital program and operating budget
  - The District’s contributions to WMATA capital and operating budget
  - The District’s Highway Trust Fund, used primarily to match FHWA funds
- DDOT is responsible for developing a State Transportation Improvement Program (STIP) including projects and programs using federal and District transportation funds.
- The MWCOG approves the region’s TIP. Projects using federal funds must be included in the TIP before they can be implemented.
- MWCOG also produces an annual Constrained Long Range Plan (CLRP). Regionally significant projects must be included in the CLRP so that they may be included in the region’s air quality analysis on an annual basis.

A Transportation Improvement Plan (TIP) is a six-year financial program that describes the schedule for obligating funds to local projects. It represents an agency’s intent to construct or implement specific projects or programs and the anticipated flow of funds.

**V. Budget and Prioritization**

**A. BUDGETING PROCESS**

moveDC was developed in a fiscally unconstrained environment, but DDOT recognizes that complete funding sources must be identified to move forward towards implementation of all moveDC recommendations. As the previous section outlines, over the course of the 25-year horizon of moveDC, there is an annual gap of $1.2 billion in existing “committed” funds. Even if all of the potential funding sources were implemented, there would still be an annual gap of nearly $110 million.

Because of this fiscal reality, there will be tradeoffs in implementation. moveDC developed a methodology for prioritizing recommendations that can assist in the process of making annual budget decisions. In prioritizing infrastructure investments in transportation over the next 25 years, DDOT should take the following approach:

1. **Fund basic State of Good Repair, operations, and maintenance for existing programs.** This includes everything from resurfacing roadways and repairing sidewalks to maintaining the signal system and streetlights. This includes the District’s funding for WMATA operations and maintenance activities, which is the largest cost area in this category. This also includes maintenance and operations of ongoing investment like Capital Bikeshare and the D.C. Streetcar system. This category will generally account for approximately
50 percent of the District’s annual baseline transportation budget (based on 2014 value), but may increase over time as transit operations expand and new infrastructure is built and expanded.

2. **Allocate additional resources that accelerate the pace of reaching State of Good Repair for all infrastructure.** This category includes increased investments in street and sidewalk repair, as well as increased capital investment in the Metrorail and Metrobus system. This category will generally account for approximately 10 percent of the District’s annual baseline transportation budget, but should account for at least 25 percent of any incremental transportation revenues.

3. **Fund critical transportation infrastructure investments to address deficiencies, safety, or capacity needs.** This category includes many of the infrastructure investments outlined in Chapter 4, Policy and Planning Framework, and is at the core of many of moveDC’s recommendations. This category will generally account for approximately 40 percent of the District’s baseline transportation budget, but should account for 75 percent of any incremental transportation revenues.

The final category—critical investments in transportation infrastructure—represents $18.9 billion in potential costs over the 25-year plan, or nearly as much as the total committed revenues. Therefore, these capital projects need to be prioritized to maximize the impact and benefits of incremental investments. While each recommendation must go through the Project Development process prior to implementation, DDOT should only seek to advance investments that have the most merit to meet moveDC’s goals.

**B. PRIORITIZATION OF INFRASTRUCTURE INVESTMENTS**

As the costs and revenues make clear, DDOT and partner agencies will not be able to advance all of the moveDC recommendations at one time, but should look to implement over time to support the incremental growth in population and employment in the District over the moveDC horizon. An important element of moveDC was ensuring that investments are prioritized using a data-driven and transparent method that provides the public and decision-makers with a clear view of why and how individual recommendations were ranked and ultimately prioritized. Pursuing investments that best meet the moveDC’s objectives is essential to the success of the District’s transportation system.

Capital programs and asset management—both of which are related to ensuring safe and reliable operations and adequate maintenance of existing system assets—were not prioritized. The level at which each of these are funded should be established through normal annual District budget processes, as described in the previous section.

**Background**

The moveDC prioritization approach is based on the collective experience of major metropolitan areas and Metropolitan Planning Organizations; an understanding of federal planning factors and Moving Ahead for Progress in the 21st Century (MAP-21) guidance; surveys conducted as a part of the moveDC planning process; and the vision and goals established for moveDC. The prioritization process is coordinated with DDOT’s core mission, business operations approach, and moveDC’s goals to identify the criteria and measurement methods that could logically organize priorities within the long-range plan.

**Technical Approach**

moveDC capital investment recommendations were prioritized objectively based on quantitative and qualitative evaluation measures. Some other investments, led by other agencies or organizations that would not require DDOT or District funding, were not evaluated through this framework. Examples include capacity or station upgrades for commuter rail operated by MARC or VRE. These are opportunities that DDOT can continue to support, but moveDC did not prioritize in the same manner as District-led improvements.
### Table 5.5: Goals, Prioritization Criteria and Evaluation Measures

<table>
<thead>
<tr>
<th>Goal</th>
<th>Metric</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sustainability &amp; Health (15 points)</strong></td>
<td>Non-Auto Mode Split</td>
<td>Does the project contribute to an increase in the non-auto mode split for District travelers?</td>
</tr>
<tr>
<td></td>
<td>Non-motorized Access to Parks &amp; Green Space</td>
<td>How many parks and areas of green space are within a certain distance of the project?</td>
</tr>
<tr>
<td></td>
<td>Active Transportation Benefits</td>
<td>Does the project improve conditions for bicycles and pedestrians?</td>
</tr>
<tr>
<td><strong>Citywide Mobility (12 points)</strong></td>
<td>Person-carrying Capacity</td>
<td>How much does the person-carrying capacity increase (percent basis) on the project corridor?</td>
</tr>
<tr>
<td></td>
<td>Freight Accommodation</td>
<td>Does the project maintain or enhance freight mobility and accommodation?</td>
</tr>
<tr>
<td></td>
<td>Regional Integration</td>
<td>Does the project integrate with an existing or planned regional facility?</td>
</tr>
<tr>
<td></td>
<td>Address Existing Deficiency: Congestion</td>
<td>Does the project address existing congestion?</td>
</tr>
<tr>
<td></td>
<td>Address Existing Deficiency: Gaps in Network</td>
<td>How does the project expand the network?</td>
</tr>
<tr>
<td><strong>Neighborhood Connectivity (12 points)</strong></td>
<td>Transportation Coverage</td>
<td>How many residents and employees are within a certain distance of the project?</td>
</tr>
<tr>
<td></td>
<td>Neighborhood Transportation Choice</td>
<td>How many barriers (rivers, parks, interstates, railroads) are crossed by the project?</td>
</tr>
<tr>
<td></td>
<td>Population &amp; Job Centers</td>
<td>How many population and job centers (based on District Comprehensive Plan) are within a certain distance of the project?</td>
</tr>
<tr>
<td></td>
<td>Economically Challenged &amp; Redevelopment Areas</td>
<td>How many economic challenged (based on Census data) and redevelopment areas (based on District Comprehensive Plan) are within a certain distance of the project?</td>
</tr>
<tr>
<td><strong>Safety &amp; Security (15 points)</strong></td>
<td>User Safety</td>
<td>Is the project designed to improve system safety and/or address an existing safety deficiency?</td>
</tr>
<tr>
<td></td>
<td>Emergency Redundancy</td>
<td>Does the project provide increased person-carrying capacity along evacuation routes?</td>
</tr>
<tr>
<td></td>
<td>Sidewalk Enhancement</td>
<td>Does the project provide a new or enhance an existing pedestrian facility?</td>
</tr>
<tr>
<td><strong>Public Space (6 points)</strong></td>
<td>Protects Important Corridors and Landscapes</td>
<td>Does the project protect or positively contribute to the protection of designated important corridors?</td>
</tr>
<tr>
<td></td>
<td>Functional, Beautiful, and Walkable</td>
<td>Does the project make the city’s transportation system more functional, beautiful, and walkable?</td>
</tr>
<tr>
<td><strong>Preservation (30 points)</strong></td>
<td>State of Good Repair (SOGR)</td>
<td>SOGR Projects: Does the project address currently failing or deficient infrastructure? Does the project entail preventative maintenance?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SOGR Projects: Does the project contribute to state of good repair?</td>
</tr>
</tbody>
</table>
moveDC capital investments also were prioritized subjectively based on an understanding of community and stakeholder support, existing commitments, and goals of ensuring transportation investments are distributed across the District in the service of current and future residents. Cost was not a criterion used in prioritization, but will need to be a factor in individual budget decisions.

To the extent that a moveDC goal had the ability to be specifically and reliably measured, it was assigned a prioritization criteria with a corresponding evaluation approach. Table 5.5 shows the relationship between moveDC goals and prioritization criteria, as well as measurement methods used for each criterion and the total points (out of 100) available for each goal area.

### Additional Ranking Factors

In addition to the purely technical approach, moveDC used additional factors to evaluate potential infrastructure investments. These factors included previous investments in the project development process, an evaluation of community and political support for potential investments, and a general goal of geographic diversity in investments. These additional factors were used to supplement, but not replace the technical evaluation factors in determining the overall priority of individual infrastructure recommendations.

Individual capital investment recommendations were measured within each criterion and then processed into tiers within infrastructure groupings, as shown in Table 5.6. The tiers were used to rank and organize priorities. Figure 5.3 shows the basic prioritization process flow.

Pedestrian rankings were prioritized in a slightly different manner than other modes, with a focus on proximity to schools, parks and recreation facilities, and transit stops and on safety, as described further in the Pedestrian Element.

### Tiers and Phasing

The prioritization approach described above was used to determine a numeric score for each capital investment within the groups defined in Table 5.6. Based on a combination of numeric scores from the objective ranking process and additional ranking factors, capital investments were grouped into one of four tiers. Investments within Tier 1 are assumed to be the highest priorities for implementation. Investments in Tier 4 are lower priorities relative to other investments within their group.

It is worth noting that in many cases, Tier 1 recommendations—due to size, scale, cost, and complexity—cannot be immediately constructed and will first require investment in refinement,

---

**Table 5.6: Groups for Prioritization**

<table>
<thead>
<tr>
<th>Modal Group</th>
<th>Capital Investment Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>Sidewalk</td>
</tr>
<tr>
<td>Transit</td>
<td>Metrorail</td>
</tr>
<tr>
<td></td>
<td>Streetcar</td>
</tr>
<tr>
<td></td>
<td>High-Capacity Transit</td>
</tr>
<tr>
<td></td>
<td>Bus Lane</td>
</tr>
<tr>
<td>Bus Transit</td>
<td>High-Frequency Bus Corridor</td>
</tr>
<tr>
<td>Bike and Trails</td>
<td>Cycle Track</td>
</tr>
<tr>
<td></td>
<td>Bike Lane</td>
</tr>
<tr>
<td></td>
<td>Trail</td>
</tr>
<tr>
<td>Vehicular</td>
<td>New Street (at grade)</td>
</tr>
<tr>
<td></td>
<td>Roadway Reconfiguration</td>
</tr>
<tr>
<td></td>
<td>Managed Lanes</td>
</tr>
<tr>
<td></td>
<td>Cordon Charge</td>
</tr>
<tr>
<td>Bridges</td>
<td>Bridge Rehabilitation</td>
</tr>
<tr>
<td></td>
<td>New Bridge or Tunnel</td>
</tr>
<tr>
<td>Freight</td>
<td>Freight Improvement Corridor</td>
</tr>
</tbody>
</table>
definition, and development through DDOT’s Project Development Process. Similarly, most recommendations in other tiers are likely to require some level of proactive investment in further development prior to them becoming the District’s highest implementation priorities, but remain opportunities for long-term implementation.

Generally, next steps for capital investments within identified tiers are likely to be as follows (additionally affected by capital investment size, scale, cost, and complexity):

- **Tier 1.** Investments should be considered as part of DDOT’s 6-year TIP and annual work program development, if they are not already included. Some projects may be able to move directly into construction (those having successfully completed Project Development), while others become high priorities for advancement through the Project Development Process. The rate at which they move through the process may be dependent on agency capacity, projected need, and factors such as size, scale, complexity, and cost. Examples of Tier 1 capital investments include:
  - North-South streetcar line
  - 16th Street NW high-capacity transit line
  - Completion of the Metropolitan Branch Trail
  - Pennsylvania Avenue NW cycle track between 17th Street NW and M Street NW
  - Galveston Street SW between S. Capitol Street and Martin Luther King Junior Avenue SE
  - Managed lanes on I-395
  - Central Employment Area cordon charge
  - Rehabilitation of the East Capitol Street bridge
  - New York Avenue NE freight improvement corridor

- **Tier 2.** Investments within this tier are not high priorities in the early years of moveDC implementation. There is the potential that they could begin (or may already be) moving through the Project Development Process if there is compelling rationale for advancing them. Reasons for advancing investments in this tier include
addressing a key deficiency in safety or system coverage; meeting an existing commitment; or positioning the investment to be delivered when it will be needed. Examples of Tier 2 capital investments include:

- Extension of the North-South streetcar line to Silver Spring, MD
- Pennsylvania Avenue SE high-capacity transit line
- High-frequency bus corridor improvements along Military Road NW/Missouri Avenue NW/South Dakota Avenue NE between Fort Totten and Friendship Heights
- Rhode Island Avenue NE/NW cycle track between Reed Street NE and M Street NW
- 13th Street SE between Good Hope Road SE and Pleasant Street SE
- Managed lanes on Canal Road NW
- Reconfiguration of Rock Creek and Potomac Parkway NW to allow for two-way travel all day
- Connecticut Avenue NW freight improvement corridor

- **Tier 3.** Investments within this tier are not priorities for DDOT-led advancement in the early years of moveDC implementation. They could move forward earlier under circumstances such as real estate development initiatives and non-DDOT partnerships providing the opportunity for non-District led completion or specific funding. In addition, some recommendations in this tier may need early investment in the Project Development Process in order for them to be ready when they become high priorities. Examples of Tier 3 capital investments include:
  - Extension of the Anacostia Streetcar line to Maryland
  - Wisconsin Avenue NW high-capacity transit line
  - High-frequency bus corridor improvements along Cleveland Avenue/Calvert Street/Columbia Road between Brookland and Glover Park
  - Good Hope Road SE cycle track between Alabama Avenue SE and Minnesota Avenue SE
  - 18th Street NW between Hamlin Street NW and South Dakota Avenue NW
  - Fort Circle Trail
  - Managed lanes on Canal Road NW
  - New bridge at Kennedy Street NE crossing the railroad tracks

- **Tier 4.** Generally, investments within this tier are not priorities for DDOT-led advancement and are lower priority for additional Project Development in the early years of implementation. These recommendations are still potential opportunities that could be advanced through partnerships or initiatives led and funded by others. Examples of Tier 3 capital investments include:
  - North Capitol Street high-capacity transit line
  - High-frequency bus corridor improvements along Columbia Road/Georgia Avenue NW Dupont Circle and Petworth
  - Missouri Avenue NW cycle track between North Capitol Street and Military Road NW
  - Fort Drive NE between 2nd Street NE and North Capitol Street
  - Southern Avenue SE extension between Naylor Road SE and Branch Avenue SE
  - Freight improvement corridor on Rhode Island Avenue NW/NE between Scott Circle and Reed Street NW

**Partner Organizations**

While the implementation of most capital investment recommendations will be led by DDOT, some are likely to occur through partnership among DDOT and other agencies or organizations or with DDOT in a support role to other agencies or organizations.

**Cost**

Costs for moveDC capital investments were developed in the same method as described in the Plan Cost section. All cost figures in this section were developed in current year (2014) dollars. The costs within moveDC represent long-range planning level estimates of cost and will need to be further refined as recommendations move forward. Table 5.7 shows a summary of capital investment costs by tier.
C. OUTCOMES
The full results of the prioritization process are shown by tier in the following figures and tables:

- **Figure 5.4 and Table 5.8**: Tier 1 Capital Investments
- **Figure 5.5 and Table 5.9**: Tier 2 Capital Investments
- **Figure 5.6 and Table 5.10**: Tier 3 Capital Investments
- **Figure 5.7 and Table 5.11**: Tier 4 Capital Investments
- **Figure 5.8 Pedestrian Capital Investment Tiers**

In addition to each capital investment’s rating (tier), the tables describe potential implementation responsibility for each project and provides a planning-level cost estimate, where it was possible to prepare a planning-level cost estimate based on information currently available. Pedestrian capital improvements are not included on in the table.

VI. Next Steps
Implementing moveDC will be an ongoing and iterative process that should be reevaluated on a regular basis. Moving forward, key steps at the citywide level that will help advance the recommendations of moveDC include the following:

1. **Continue the implementation of critical capital projects.** DDOT is engaged in the project development, design, and construction of critical investments. Successful delivery of the 22-mile Priority Streetcar System, major bridge projects like the replacement of the Frederick Douglass Memorial Bridge, the completion of the Metropolitan Branch Trail, and other major initiatives should remain the focus of the agency.

2. **Identify sustainable funding sources for implementing moveDC recommendations.** The potential revenue sources identified here are among the possible solutions, but each would require more detailed understanding of the benefits and implications. A focused initiative to develop and vet potential sources would help broaden the understanding of the relative tradeoffs. Funding sources and priorities should be tied to the two goals of accelerated good repair and support for new capital projects.

3. **Advance priority Tier 1 recommendations, including needed preliminary studies.** Tier 1 capital investments are at various stages of the project development process. Many have yet to be advanced through any level of detailed study. Because of their complexity, some may require more time to advance than others, but preliminary studies should be initiated now in order to more fully assess potential benefits, costs, and challenges to implementation.

4. **Advance critical policy and programmatic initiatives.** While the implementation section has focused primarily on the capital investment-related actions, there is a need to advance and implement policy and programmatic recommendations. Expansion of the Capital Bikeshare program, broader Transportation Demand Management and active parking management, and many other moveDC recommendations are just as necessary in achieving the transportation vision. The priority actions are detailed more fully in each modal chapter.
FIGURE 5.4 – TIER 1 CAPITAL INVESTMENTS
This figure shows Tier 1 capital investments for all modal groups except pedestrian.

Legend
- Quadrant Boundary
- Ward Boundary
- Water
- Park

Existing Infrastructure
- Metrorail Station
- Metrorail Line
- Existing Trail
- Railroad
- Road

Tier 1 Capital Investments
- Bike and Trails
- Freight
- Vehicular, Management, and Bridge
- Transit
FIGURE 5.5 – TIER 2 CAPITAL INVESTMENTS
This figure shows Tier 2 capital investments for all modal groups except pedestrian.
FIGURE 5.6 – TIER 3 CAPITAL INVESTMENTS
This figure shows Tier 3 capital investments for all modal groups except pedestrian.
FIGURE 5.7 – TIER 4 CAPITAL INVESTMENTS
This figure shows Tier 4 capital investments for all modal groups except pedestrian.

Legend
- Quadrant Boundary
- Ward Boundary
- Water
- Park
- University
- Military
- Monumental Core

Existing Infrastructure
- Metrorail Station
- Metrorail Line
- Existing Trail
- Railroad
- Road

Tier 4 Capital Investments
- Bike and Trails
- Freight
- Vehicular, Management, and Bridges
- Transit

[Map showing Tier 4 capital investments for all modal groups except pedestrian.]
FIGURE 5.7 – PEDESTRIAN CAPITAL INVESTMENT TIERS

This figure shows all pedestrian capital investment tiers.
Table 5.8: Tier 1 Capital Investments (Also shown in Figure 5.4, page 134)

<table>
<thead>
<tr>
<th>Capital Investment Type</th>
<th>Name of Facility</th>
<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDoT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCT</td>
<td>16TH STREET NW</td>
<td>SILVER SPRING</td>
<td>DOWNTOWN</td>
<td>6.4</td>
<td>1, 2, 4</td>
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<td>$159</td>
</tr>
<tr>
<td>STREETCAR</td>
<td>ANACOSTIA STREETCAR EXTENSION</td>
<td>HOWARD RD/FIRTH STERLING</td>
<td>11TH ST BRIDGE</td>
<td>0.7</td>
<td>6, 8</td>
<td>LEAD</td>
<td>YES</td>
<td>$55</td>
</tr>
<tr>
<td>STREETCAR</td>
<td>BENNING RD STREETCAR EXTENSION</td>
<td>OKLAHOMA AVE NE</td>
<td>BENNING ROAD METRORAIL STATION</td>
<td>1.9</td>
<td>5, 7</td>
<td>LEAD</td>
<td>YES</td>
<td>$85</td>
</tr>
<tr>
<td>STREETCAR</td>
<td>M STREET SE/ SOUTHWEST STREETCAR</td>
<td>11TH ST BRIDGE</td>
<td>MAINE AVE SW</td>
<td>3.0</td>
<td>6, 8</td>
<td>LEAD</td>
<td>YES</td>
<td>$125</td>
</tr>
<tr>
<td>METRORAIL</td>
<td>NEW DOWNTOWN METRORAIL LINE</td>
<td>GEORGETOWN</td>
<td>SOUTHWEST WATERFRONT</td>
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<td>2, 3, 5, 6</td>
<td>SUPPORT</td>
<td>NO</td>
<td>$7,787</td>
</tr>
<tr>
<td>STREETCAR</td>
<td>NORTH-SOUTH STREETCAR LINE</td>
<td>TAKOMA METRORAIL STATION</td>
<td>BUZZARD POINT</td>
<td>9.2</td>
<td>1, 2, 4, 6</td>
<td>LEAD</td>
<td>YES</td>
<td>$460</td>
</tr>
<tr>
<td>STREETCAR</td>
<td>UNION STATION TO GEORGETOWN STREETCAR</td>
<td>UNION STATION</td>
<td>GEORGETOWN WATERFRONT</td>
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<td>2, 6</td>
<td>LEAD</td>
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<td>$155</td>
</tr>
<tr>
<td>HIGH-FREQUENCY BUS</td>
<td>WISCONSIN/ CONNECTICUT AVE NW</td>
<td>FRIENDSHIP HEIGHTS</td>
<td>DUPONT CIRCLE</td>
<td>4.6</td>
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<td>PARTNER</td>
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<td>$15</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>10TH ST NW</td>
<td>H ST NW</td>
<td>MASSACHUETTS AVE NW</td>
<td>0.3</td>
<td>2</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.03</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>14TH ST NW</td>
<td>FLORIDA AVE NW</td>
<td>COLUMBIA RD NW</td>
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<td>1</td>
<td>LEAD</td>
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<td>$1.1</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>15TH ST NE (GAP)</td>
<td>NORTH CAROLINA AVE NE</td>
<td>C ST NE</td>
<td>0.1</td>
<td>6</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.01</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>15TH ST NW</td>
<td>V ST NW</td>
<td>EUCLID ST NW</td>
<td>0.4</td>
<td>1</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.8</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>15TH ST NW</td>
<td>E ST NW &amp; PENNSYLVANIA AVE NW</td>
<td>CONSTITUTION AVE NW</td>
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<td>2</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.5</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>15TH ST NW</td>
<td>I ST NW</td>
<td>NEW YORK AVE NW &amp; PENNSYLVANIA AVE NW</td>
<td>0.2</td>
<td>2</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.4</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>16TH ST NW</td>
<td>SPRING RD NW</td>
<td>MARYLAND LINE</td>
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<td>1, 4</td>
<td>LEAD</td>
<td>NO</td>
<td>$4.8</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>4TH ST SW</td>
<td>P ST SW</td>
<td>M ST SW</td>
<td>0.3</td>
<td>6</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.7</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>BENNING RD</td>
<td>ANACOSTIA AVE NE</td>
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<td>LEAD</td>
<td>NO</td>
<td>$2.2</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>C ST NE</td>
<td>21ST ST NE &amp; 22ND ST NE</td>
<td>NORTH CAROLINA AVE NE</td>
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<td>6, 7</td>
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</tr>
<tr>
<td>BICYCLE</td>
<td>CALVERT ST NW</td>
<td>WOODLEY PL NW</td>
<td>24TH ST NW &amp; SHOREHAM DR NW</td>
<td>0.1</td>
<td>3</td>
<td>LEAD</td>
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<td>$0.01</td>
</tr>
<tr>
<td>BICYCLE</td>
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<td>SOUTHWEST DR SE</td>
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<tr>
<td>BICYCLE</td>
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<td>SUCCESS AVE SW</td>
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</tr>
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<td>E ST NE (GAP)</td>
<td>COLUMBUS CIR NE</td>
<td>E ST NW &amp; NORTH CAPITOL ST</td>
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<td>6</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.01</td>
</tr>
</tbody>
</table>
## Table 5.8: Tier 1 Capital Investments (Also shown in Figure 5.4, page 134)

<table>
<thead>
<tr>
<th>Capital Investment Type</th>
<th>Name of Facility</th>
<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost ( Millions)</th>
</tr>
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<tbody>
<tr>
<td>BICYCLE</td>
<td>EAST CAPITOL CROSSING</td>
<td>C ST NE</td>
<td>33RD ST NE</td>
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<td>LEAD</td>
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</tr>
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<td>15TH ST NW &amp; NEW HAMPISHIRE AVE NW &amp; W ST NW</td>
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<td>1</td>
<td>LEAD</td>
<td>NO</td>
<td>$0.4</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>GALVESTON ST SW</td>
<td>1ST ST SE &amp; SOUTH CAPITOL ST</td>
<td>MARTIN LUTHER KING JR AVE SW</td>
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<td>8</td>
<td>LEAD</td>
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<td>$0.03</td>
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<td>IRVING RDNW/NE (UPGRADE)</td>
<td>MONROE ST NE</td>
<td>PARK PL NW</td>
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<td>1, 5</td>
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<td>$8</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>LONG BRIDGE CROSSING</td>
<td>MAINE AVE SW</td>
<td>VIRGINIA LINE</td>
<td>1.0</td>
<td>2, 6</td>
<td>LEAD</td>
<td>STUDY</td>
<td>SEE LONG BRIDGE COST</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>M ST NW/NE</td>
<td>FLORIDA AVE NE</td>
<td>THOMAS CIRCLE NW</td>
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<tr>
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<td>MARYLAND LINE</td>
<td>R ST NW</td>
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<td>2, 3</td>
<td>LEAD</td>
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<tr>
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<td>MET BRANCH TRAIL</td>
<td>FORT TOTTEN</td>
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<tr>
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<td>NEBRASKA AVE NW</td>
<td>ROCKWOOD PKWY NW</td>
<td>WISCONSIN AVE NW</td>
<td>1.0</td>
<td>3</td>
<td>LEAD</td>
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<tr>
<td>BICYCLE</td>
<td>NEW YORK AVE</td>
<td>KIRBY ST NW</td>
<td>MARYLAND LINE</td>
<td>4.6</td>
<td>5, 6, 7</td>
<td>LEAD</td>
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</tr>
<tr>
<td>BICYCLE</td>
<td>OXON RUN TRAIL EAST</td>
<td>13TH ST SE</td>
<td>MARYLAND LINE</td>
<td>1.0</td>
<td>8</td>
<td>LEAD</td>
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<td>$9</td>
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<tr>
<td>BICYCLE</td>
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<td>FORRESTER ST SW</td>
<td>0.4</td>
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<td>P ST SW</td>
<td>SOUTH CAPITOL ST</td>
<td>4TH ST SW</td>
<td>0.5</td>
<td>6</td>
<td>LEAD</td>
<td>NO</td>
<td>$1.0</td>
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<tr>
<td>BICYCLE</td>
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<td>ANACOSTIA FREEWAY</td>
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<td>LEAD</td>
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</tr>
<tr>
<td>BICYCLE</td>
<td>PENNSYLVANIA AVE NW</td>
<td>17TH ST NW</td>
<td>29TH ST NW &amp; M ST NW</td>
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Table 5.8: Tier 1 Capital Investments (Also shown in Figure 5.4, page 134)

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<th>To</th>
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<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<td>KENILWORTH TERRACE NE</td>
<td>SHERIFF RD NE</td>
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<td>EAST CAPITOL ST &amp; KENILWORTH AVE NE</td>
<td>INTERSTATE 295</td>
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<td>TIP</td>
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<td>–</td>
<td>5.9</td>
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<td>CONSTITUTION AVE NW</td>
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<td>WHITEHURST FWY NW</td>
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### Table 5.9: Tier 2 Capital Investments (Also shown in Figure 5.5, page 136)

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<th>To</th>
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<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<td>ARLINGTON</td>
<td>SOUTHWEST WATERFRONT</td>
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<td>2, 6</td>
<td>LEAD</td>
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<td>TENLEYTOWN</td>
<td>MICHIGAN PARK</td>
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<td>1, 3, 4, 5</td>
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<td>FORT TOTTEN</td>
<td>FRIENDSHIP HEIGHTS</td>
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<td>EASTERN MARKET</td>
<td>SKYLAND</td>
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<td>PLEASANT ST SE</td>
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<td>D ST SE &amp; KENTUCKY AVE SE</td>
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<td>GALVESTON ST SW &amp; SOUTH CAPITOL ST</td>
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<td>GEORGETOWN CANAL</td>
<td>R ST NW</td>
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Table 5.9: Tier 2 Capital Investments (Also shown in Figure 5.5, page 136)

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<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
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<td>10TH ST NW</td>
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### Table 5.9: Tier 2 Capital Investments (Also shown in Figure 5.5, page 136)

<table>
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<tr>
<th>Capital Investment Type</th>
<th>Name of Facility</th>
<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<td>HOWARD RD SE / SOUTH CAPITOL ST</td>
<td>FIRTH STERLING AVE SE</td>
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<td>MARTIN LUTHER KING JR AVE SE</td>
<td>MALCOLM X AVE SW &amp; SOUTH CAPITOL ST</td>
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<td>NEW YORK AVE NE</td>
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<td>FORRESTER ST SW</td>
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<td>NO</td>
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<td>BARNEY CIR SE</td>
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Table 5.9: Tier 2 Capital Investments (Also shown in Figure 5.5, page 136)

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<th>Name of Facility</th>
<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<tbody>
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<td>CONNECTICUT AVE NW &amp; M ST NW</td>
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<td>SOUTHERN AVE SE</td>
<td>EAST CAPITOL ST &amp; MINNESOTA AVE NE/SE</td>
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<td>EASTERN AVE NE</td>
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<td>HAREWOOD RD NW</td>
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<td>HALLEY PL SE &amp; MARTIN LUTHER KING JR AVE SE</td>
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<td>SUITLAND PKWY SE</td>
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<td>V ST NW</td>
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<td>VERMONT AVE NW/15TH ST NW</td>
<td>THOMAS CIR NW</td>
<td>I ST NW</td>
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<td>LEAD</td>
<td>NO</td>
<td>$0.03</td>
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<td><strong>BICYCLE</strong></td>
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<td>CONSTITUTION AVE NW</td>
<td>ROCK CREEK &amp; POTOMAC PKWY NW</td>
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<td>2</td>
<td>LEAD</td>
<td>NO</td>
<td>$2.4</td>
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<td>39TH ST NW &amp; GARFIELD ST NW</td>
<td>TUNLAW RD NW</td>
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<td>3</td>
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<td>SOUTHERN AVE SE</td>
<td>ALABAMA AVE SE</td>
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<td>LEAD</td>
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<td>MARYLAND LINE</td>
<td>KEY BRIDGE</td>
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<td>KENILWORTH AVE NE</td>
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<td>3RD ST NW</td>
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<td>3RD ST NW</td>
<td>NEW JERSEY AVE NW</td>
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<td>6,7</td>
<td>SUPPORT</td>
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<td>PRIVATELY FUNDED</td>
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<td>CONSTITUTION AVE NW</td>
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<td>2</td>
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<td>REVENUE NEUTRAL</td>
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### Table 5.9: Tier 2 Capital Investments (Also shown in Figure 5.5, page 136)

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<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<td>VIRGINIA AVE NW</td>
<td>Q ST NW</td>
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<td>K ST NW</td>
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<td>BRANCH AVE SE</td>
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Table 5.10: Tier 3 Capital Investments (Also shown in Figure 5.6, page 138)

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<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<td>MCFHERSON SQUARE</td>
<td>COLUMBIA HEIGHTS</td>
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<td>PARTNER</td>
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<td>HIGH-FREQUENCY BUS</td>
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<td>MINNESOTA AVE</td>
<td>METRORAIL</td>
<td>SAINT ELIZABETHS</td>
<td>7.4</td>
<td>7, 8</td>
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<td>ANACOSTIA SOUTH STREETCAR EXTENSION</td>
<td>CLEVELAND AVE NW/ CALVERT ST NW/ COLUMBIA RD NW</td>
<td>MCMILLAN</td>
<td>GLOVER PARK</td>
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<td>1, 3</td>
<td>PARTNER</td>
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<tr>
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<td>MACARTHUR BLVD NW/K ST NW</td>
<td>FARRAGUT WEST</td>
<td>PALISADES</td>
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<td>2, 3</td>
<td>PARTNER</td>
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<td>NAVY YARD</td>
<td>ANACOSTIA</td>
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Table 5.10: Tier 3 Capital Investments (Also shown in Figure 5.6, page 138)

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<th>Ward(s)</th>
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Table 5.10: Tier 3 Capital Investments (Also shown in Figure 5.6, page 138)

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<th>To</th>
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Table 5.10: Tier 3 Capital Investments (Also shown in Figure 5.6, page 138)

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Table 5.10: Tier 3 Capital Investments (Also shown in Figure 5.6, page 138)

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<th>To</th>
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<td>34TH ST NW</td>
<td>0.5</td>
<td>2</td>
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<tr>
<td>BICYCLE</td>
<td>MATHEWSON DR NW</td>
<td>ARGYLE TER NW &amp; UPSHUR ST NW</td>
<td>BLAGDEN AVE NW</td>
<td>0.2</td>
<td>4</td>
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<tr>
<td>BICYCLE</td>
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<td>NORTH CAPITOL ST &amp; RIGGS RD NE</td>
<td>MILITARY RD NW</td>
<td>1.3</td>
<td>4, 5</td>
<td>LEAD</td>
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<td>BICYCLE</td>
<td>TROLLEY TRAIL</td>
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<td>MACARTHUR BLVD NW</td>
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<td>2, 3</td>
<td>LEAD</td>
<td>NO</td>
<td>$5</td>
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<td>BICYCLE</td>
<td>WALTER REED TRAILS</td>
<td>16TH ST NE</td>
<td>GEORGIA AVE NW</td>
<td>1.4</td>
<td>4</td>
<td>LEAD</td>
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<td>BICYCLE</td>
<td>WHITEHURST FWY NW</td>
<td>30TH ST NW &amp; K ST NW</td>
<td>KEY BRIDGE</td>
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<td>VEHICLE</td>
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<td>3RD ST NW</td>
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<td>VEHICLE</td>
<td>13TH ST SE</td>
<td>PLEASANT ST SE</td>
<td>PECAN ST SE</td>
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<td>MISSISSIPPI AVE SE</td>
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Table 5.11: Tier 4 Capital Investments (Also shown in Figure 5.7, page 140)

<table>
<thead>
<tr>
<th>Capital Investment Type</th>
<th>Name of Facility</th>
<th>From</th>
<th>To</th>
<th>Length (miles)</th>
<th>Ward(s)</th>
<th>DDOT Role</th>
<th>TIP Project</th>
<th>Cost (Millions)</th>
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<tbody>
<tr>
<td>VEHICLE</td>
<td>14TH ST NE</td>
<td>14TH ST NE</td>
<td>RHODE ISLAND AVE NE</td>
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<td>PARTNER</td>
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<td>VEHICLE</td>
<td>14TH ST NE</td>
<td>NEW YORK AVE NE</td>
<td>W ST NE</td>
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<tr>
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<td>5TH ST SW</td>
<td>G ST SW</td>
<td>E ST SW</td>
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<td>LEAD</td>
<td>NO</td>
<td>$31</td>
</tr>
<tr>
<td>VEHICLE</td>
<td>D ST SW</td>
<td>2ND ST SW</td>
<td>WASHINGTON AVE SW &amp; DELAWARE AVE SW</td>
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<td>VEHICLE</td>
<td>EASTERN AVE NE</td>
<td>NEW YORK AVE NE</td>
<td>FORT LINCOLN DR NE</td>
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<tr>
<td>VEHICLE</td>
<td>G ST NE</td>
<td>1ST ST NE</td>
<td>2ND ST NE</td>
<td>0.2</td>
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<td>PARTNER</td>
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<tr>
<td>VEHICLE</td>
<td>SLIGO MILL RD</td>
<td>CHILLUM PL NE</td>
<td>OGE LTHORPE ST NW</td>
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<td>LEAD</td>
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<tr>
<td>VEHICLE</td>
<td>SOUTHERN AVE SE</td>
<td>NAYLOR RD SE</td>
<td>BRANCH AVE SE</td>
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<td>LEAD</td>
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<td>$9</td>
</tr>
<tr>
<td>FREIGHT</td>
<td>7TH STREET/ GEORGIA AVE NW</td>
<td>MASSACHUSETTS AVE NW</td>
<td>BARRY PL NW</td>
<td>1.3</td>
<td>1, 2, 6</td>
<td>LEAD</td>
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</tr>
<tr>
<td>FREIGHT</td>
<td>RHODE ISLAND AVE</td>
<td>SCOTT CIRCLE NW</td>
<td>REED ST NE</td>
<td>2.7</td>
<td>1, 2, 5, 6</td>
<td>LEAD</td>
<td>NO</td>
<td>NOT AVAILABLE</td>
</tr>
</tbody>
</table>
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# moveDC Glossary

## LIST OF ACRONYMMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>Annual Average Daily Traffic</td>
</tr>
<tr>
<td>ADA</td>
<td>Americans with Disability Act</td>
</tr>
<tr>
<td>ADT</td>
<td>Average Daily Traffic</td>
</tr>
<tr>
<td>ANC</td>
<td>Advisory Neighborhood Commission</td>
</tr>
<tr>
<td>AOC</td>
<td>Architect of the Capitol</td>
</tr>
<tr>
<td>AWI</td>
<td>Anacostia Waterfront Initiative</td>
</tr>
<tr>
<td>BID</td>
<td>Business Improvement District</td>
</tr>
<tr>
<td>BLOS</td>
<td>Bicycle Level of Service</td>
</tr>
<tr>
<td>BRT</td>
<td>Bus Rapid Transit</td>
</tr>
<tr>
<td>CaBi</td>
<td>Capital Bikeshare</td>
</tr>
<tr>
<td>CEA</td>
<td>Central Employment Area</td>
</tr>
<tr>
<td>CIP</td>
<td>Capital Improvement Program</td>
</tr>
<tr>
<td>DCPS</td>
<td>D.C. Public Schools</td>
</tr>
<tr>
<td>DCTC</td>
<td>D.C. Taxicab Commission</td>
</tr>
<tr>
<td>DDOT</td>
<td>District Department of Transportation</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of the Environment</td>
</tr>
<tr>
<td>DOES</td>
<td>Department of Employment Services</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>EOM</td>
<td>Executive Office of the Mayor</td>
</tr>
<tr>
<td>FHWA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>FTA</td>
<td>Federal Transit Administration</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>HAWK</td>
<td>High-intensity Activated crossWalk beacon</td>
</tr>
<tr>
<td>HCT</td>
<td>High-Capacity Transit</td>
</tr>
<tr>
<td>HOT</td>
<td>High-Occupancy Toll</td>
</tr>
<tr>
<td>HOV</td>
<td>High-Occupancy Vehicle</td>
</tr>
<tr>
<td>IMPA</td>
<td>Infrastructure Project Management Administration (DDOT)</td>
</tr>
<tr>
<td>LEED</td>
<td>Leadership in Energy and Environmental Design</td>
</tr>
<tr>
<td>LOS</td>
<td>Level of Service</td>
</tr>
<tr>
<td>LPI</td>
<td>Leading Pedestrian Intervals</td>
</tr>
<tr>
<td>MARC</td>
<td>Maryland Area Regional Commuter</td>
</tr>
<tr>
<td>M-NCPPC</td>
<td>Maryland-National Capital Park and Planning Commission</td>
</tr>
<tr>
<td>MPD</td>
<td>Metropolitan Police Department</td>
</tr>
<tr>
<td>MPO</td>
<td>Metropolitan Planning Organization</td>
</tr>
<tr>
<td>MTA</td>
<td>Maryland Transit Authority</td>
</tr>
<tr>
<td>MWAA</td>
<td>Metropolitan Washington Airports Authority</td>
</tr>
<tr>
<td>MWCOG</td>
<td>Metropolitan Washington Council of Governments</td>
</tr>
<tr>
<td>NCPC</td>
<td>National Capital Planning Commission</td>
</tr>
<tr>
<td>NoMA</td>
<td>North of Massachusetts Avenue</td>
</tr>
<tr>
<td>NPS</td>
<td>National Park Service</td>
</tr>
<tr>
<td>OP</td>
<td>D.C. Office of Planning</td>
</tr>
<tr>
<td>PCN</td>
<td>Priority Corridor Network</td>
</tr>
<tr>
<td>PPSA</td>
<td>Policy, Planning &amp; Sustainability Administration (DDOT)</td>
</tr>
<tr>
<td>PSRA</td>
<td>Public Space Regulations Administration (DDOT)</td>
</tr>
<tr>
<td>PTSA</td>
<td>Progressive Transportation Services Administration (DDOT)</td>
</tr>
<tr>
<td>RRFB</td>
<td>Rectangular Rapid Flashing Beacons</td>
</tr>
<tr>
<td>RTSP</td>
<td>Regional Transit System Plan (WMATA)</td>
</tr>
<tr>
<td>TDM</td>
<td>Transportation Demand Management</td>
</tr>
<tr>
<td>TIGER</td>
<td>Transportation Investment Generating Economic Recovery</td>
</tr>
<tr>
<td>TIP</td>
<td>Transportation Improvement Program</td>
</tr>
<tr>
<td>TOA</td>
<td>Traffic Operations Administration (DDOT)</td>
</tr>
<tr>
<td>TOD</td>
<td>Transit-Oriented Development</td>
</tr>
<tr>
<td>TSP</td>
<td>Transit Signal Priority</td>
</tr>
<tr>
<td>UFA</td>
<td>Urban Forestry Administration (DDOT)</td>
</tr>
<tr>
<td>V/C</td>
<td>Volume to Capacity Ratio</td>
</tr>
<tr>
<td>VDRPT</td>
<td>Virginia Department of Rail and Public Transportation</td>
</tr>
<tr>
<td>VMT</td>
<td>Vehicle Miles Traveled</td>
</tr>
<tr>
<td>VRE</td>
<td>Virginia Railway Express</td>
</tr>
<tr>
<td>WMATA</td>
<td>Washington Metropolitan Area Transit Authority</td>
</tr>
</tbody>
</table>
GLOSSARY

- **Activity** – The total number of people who live (residents) and work (jobs) in a given area.

- **Advisory Neighborhood Commission (ANC)** – An elected board representing a geographic subarea of the District of Columbia charged with advising on policies and programs affecting traffic, parking, recreation, street improvements, liquor licenses, zoning, economic development, police protection, sanitation and trash collection, and the District’s annual budget. There are 37 ANCs in the District. (Source: D.C. Comprehensive Plan)

- **Alley** – Public passageway for vehicles, pedestrians, drainage purposes, or any combination thereof, which connects with a street and which usually affords a means of access to the rear of properties abutting streets or highways. (Source: DDOT)

- **Alightings** – The amount of passengers “getting off” a transit vehicle for a given stop or route; the opposite of boardings.

- **Americans with Disability Act (ADA)** – Federal legislation specifying provisions to be made in the design (or redesign) of buildings, parking, and outdoor areas to remove barriers for persons with disabilities and guaranteeing equal opportunity access in public accommodations, transportation and government services. (Source: D.C. Comprehensive Plan)

- **Annual Average Daily Traffic (AADT) (also: Average Daily Traffic [ADT])** – The total volume of traffic on a highway segment for one year, divided by the number of days in the year. (Source: FHWA)

- **Architect of the Capitol (AOC)** – Federal agency responsible for the maintenance, operation, development, and preservation of the U.S. Capitol, congressional office buildings, Supreme Court, U.S. Botanic Garden, and other related facilities. (Source: D.C. Comprehensive Plan)

- **Arterial** – Roadway mainly serving through traffic; takes traffic to and from expressways and freeways with limited access to adjacent properties. (Source: D.C. Comprehensive Plan)

- **Automated Red-Light Enforcement** – To enhance the safety of the District’s residents and visitors, the Metropolitan Police Department has developed an automated photo enforcement program designed to reduce the number of drivers who violate traffic regulations. The cameras help enforce traffic laws and reduce violations by automatically photographing the license plates of vehicles whose drivers violate the regulations. The photos capture only the rear of the vehicle and its license plate—they do not show the driver or passengers. As of April 2014, the program includes camera systems that capture red-light running violations at more than three dozen intersections with a high incidence of violations and crashes, as well as photo radar systems designed to reduce speeding at locations with chronic problems. (Source: D.C. Metropolitan Police Department)

- **Average Bicycle Speed** – For analysis conducted as part of moveDC, an average bicycling speed of 8 miles per hour on bicycle lanes and 10 mph on cycle tracks and trails was assumed. A two-minute ride, used in analysis, would be approximately 0.27 miles for bicycle lanes and 0.33 miles for cycle tracks and trails.

- **Average Walk Speed** – For analysis conducted as part of moveDC, an average walk speed was assumed to be 2.4 miles per hour. A 7-minute walk, used in analysis, is approximately equivalent to 0.3 miles.
• **Barnes Dance** – A term given to an “all-pedestrian” street crossing method which allows pedestrians to cross an intersection in any direction while all vehicular movements are stopped for a given amount of time. The Barnes Dance is used in areas with high pedestrian activity and can improve safety by eliminating potential conflicts between turning vehicles and pedestrians in crosswalks.

• **Bicycle Level of Service (BLOS)** – Assessment of bicyclists’ perceived safety and comfort with respect to motor vehicle traffic while traveling along collector and arterial streets. The BLOS model evaluates bicycling suitability based on roadway width, bicycle lane widths, traffic volume, pavement surface conditions, vehicle speeds, and on-street parking. BLOS is rated on scale of A to F, A being the best. (Source: Highway Capacity Manual, 2010)

• **Bike Lane** – A bike lane is a portion of the roadway that has been designated by pavement markings for the use of bicyclists. In most cases, bike lanes are located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is 5 feet.

• **Boardings** – The amount of passengers “getting on” a transit vehicle for a given stop or route; the opposite of alightings

• **Bridge** – A single or multiple span structure, including supports, erected over a depression or an obstacle such as water, highway or railway, and having a passageway for carrying traffic or other moving loads and having an opening measured along the center of the passageway of more than 20 feet. (Source: DDOT)

• **Business Improvement District (BID)** – A defined commercial area where property owners approve a property assessment for services above and beyond what the city provides. Supplemental BID services can include cleaning, hospitality, marketing, planning, safety, event organizing and programming. BIDs are nonprofit organizations managed by a board of directors. As of April 2014, there are eight BIDs in the District (Source: D.C. BID Council)

• **Census Block** – Statistical areas defined by the U.S. Census that are bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads. Census blocks nest within all other tabulated census geographic entities and are the basis for all tabulated data. (Source: U.S. Census Bureau)

• **Census Tract** – Statistical areas used in U.S. Census reporting. Larger, geographically, than census blocks, tracts generally have between 1,200 and 8,000 people with an optimum size of 4,000 people. Tract boundaries can be defined by local jurisdictions or the Census Bureau and generally follow visible and identifiable features (Source: U.S. Census Bureau)

• **Central Employment Area (CEA)** – A legal definition used primarily by the federal government in the location of projects, leasing of space, determination of parking standards, etc. and synonymous with the major concentration of federal and commercial land uses in the core of the District of Columbia. (Source: D.C. Comprehensive Plan)

• **Commercial Vehicles** – In the District of Columbia, a commercial vehicle (truck) is defined as any vehicle with more than three wheels that is greater than twenty-two feet in length, or that is used or maintained for transporting freight, merchandise, or other commercial loads or property. (Source: goDCgo)
• **Commuter Rail** – Long-haul passenger service operating between metropolitan and suburban areas, whether within or across the geographical boundaries of a state, usually characterized by reduced fares for multiple rides, and commutation tickets for regular, recurring riders. (Source: FTA)

• **Congestion Pricing Cordon** – An established zone within a city for which drivers are required to pay a fee to travel within. Discounts and/or exceptions are given under various circumstances, especially to those traveling with multiple passengers or driving environmentally-friendly vehicles. Pricing cordons are intended for the purpose of minimizing congestion and encouraging the use of alternative modes of transportation. moveDC recommends a congestion pricing cordon for the Central Employment Area (See Vehicle Element).

• **Core Capacity** – Condition in which rail and bus transit lines and facilities, specifically those closer to the region’s center are rapidly approaching or exceeding capacity. WMATA has outlined a program of capital and operational improvements intended to address the continued crowding and degradation in the level of service around the region’s core. (Source: WMATA)

• **Curbside Management** – See Curbspace Management.

• **Culvert** – A drainage pipe, usually made of metal, concrete, or plastic, set beneath the road surface to move water from the inside of the road to the outside of the road, or under the road. Culverts are used to drain ditches, springs, and streams that cross the road. (Source: FHWA)

• **Curbspace Management (also: Curbside Management)** – The management of the portion of a road not used for vehicle travel, including parking spaces, bike lanes, shoulders, and curb cuts. Often synonymous with on-street parking management. (Source: D.C. Comprehensive Plan)

• **Cycle Track (also: Protected Bicycle Lane)** – An exclusive bicycle facility that is physically separated from motor traffic and is distinct from the sidewalk for the exclusive use of bicycles, which provides an extra sense of security for both cyclists and drivers. (Source: National Association of City Transportation Officials – Urban Bikeway Design Guide)

• **D.C. Circulator** – A bus service connecting D.C. neighborhoods, operated through a public-private partnership with DDOT. Circulator buses arrive every 10 minutes and costs $1 per ride (2014). The idea for a quick, efficient, low-cost, public-transit system originated in the National Capital Planning Commission’s 1997 vision for the District. (Source: D.C. Circulator)

• **Dedicated Transit Lane** – A lane or space on the roadway in which only transit vehicles are permitted to travel. Dedicated lanes may be physically separated or delineated using pavement markings. moveDC recommends examining converting a shared travel lane to a dedicated transit lane when the number of people riding transit is equal to the number in vehicles in a general traffic lane.

• **Department of Motor Vehicles (DMV)** – The DMV provides service to licensed drivers and identification card holders and registered vehicles at three service centers around the District. Some major services include adjudication, collecting ticket payments, and inspecting vehicles. (Source: D.C Department of Motor Vehicles)

• **District-wide Travel Demand Model (DWTDM)** – An analysis tool used as part of moveDC to assess existing and future travel patterns within the District and surrounding areas. The model uses forecast socioeconomic data to generate trips, distribute trips, process mode choice, and assign trips to the future roadway network. The model uses an additional step – Mode Choice Post Processing (see Mode Choice Post Processing) to improve the sensitivity of mode choice based on urban conditions. The DWTDM is a sub-area model of the Washington Metropolitan Area travel...
forecasting model developed and maintained by MWCOG. The DWTDM model area includes the District and areas inside the Capital Beltway (I-495).

- **Exclusive Transit Lane** – see Dedicated Transit Lane.

- **Federal Highway Administration (FHWA)** – A branch of the U.S. Department of Transportation that administers the federal-aid Highway Program, providing financial assistance to states to construct and improve highways, urban and rural roads, and bridges. (Source: FHWA)

- **Federal Transit Administration (FTA)** – A branch of the U.S. Department of Transportation that is the principal source of federal financial assistance to America’s communities for planning, development, and improvement of public or mass transportation systems. FTA provides leadership, technical assistance, and financial resources for safe, technologically advanced public transportation to enhance mobility and accessibility, to improve the Nation’s communities and natural environment, and to strengthen the national economy. (Source: FHWA)

- **Freeway** – A divided arterial highway designed for the unimpeded flow of large traffic volumes. Access to a freeway is rigorously controlled and intersection grade separations are required. (Source: FHWA)

- **HAWK (High-Intensity Activated crossWalk beacon)** – Used to allow pedestrians to cross at locations other than intersections (mid-block). When pedestrians are present, the beacon stops the road traffic so pedestrians may cross safely. These are often used in areas of high pedestrian activity.

- **Headway** – Time interval between vehicles moving in the same direction on a particular route, typically used to describe spacing between transit vehicles.

- **High-Capacity Surface Transit** – High-capacity transit that operates at street or “surface” level. For purposes on moveDC, this includes streetcar, high-capacity transit in dedicated and shared lanes, and water transit.

- **High-Capacity Transit** – A transit service that operates within a street right-of-way, in dedicated transit lanes, shared travel lanes, or a combination of both. The transit service operates at frequent intervals along a fixed route. Where dedicated transit lanes are not available, other operational strategies are used to increase transit speeds. moveDC does not recommend a specific mode technology for recommended high-capacity transit routes, but assumes they could be served by bus or streetcar.

- **High-Frequency Bus Corridor** – A heavily-traveled bus corridor that is enhanced with physical and operational modifications to improve transit service through transit operational improvement strategies.

- **High-Occupancy Vehicle (HOV)** – A vehicle containing more than one passenger. HOV 3+ vehicles contain three or more passengers.

- **High-Occupancy Vehicle (HOV) Lane** – Managed lane strategy which restricts access to vehicles unless they are HOV as a means of managing congestion.

- **High-Occupancy Toll (HOT) Lane** – Managed lane strategy which requires a fee for access by all vehicles unless they meet the occupancy regulation (often 3 or more passengers) or have other specific exceptions.
• **Highway** – Any road, street, parkway, or freeway/expressway that includes rights-of-way, bridges, railroad-highway crossings, tunnels, and additional roadway structures. The highway further includes that portion of any interstate or international bridge or tunnel and the approaches thereto. (Source: FHWA)

• **Interstate** – Limited access divided facility of at least four lanes designated by the Federal Highway Administration as part of the Interstate System. (Source: FHWA)

• **Intelligent Transportation Systems (ITS)** – The application of advanced technologies to improve the efficiency and safety of transportation systems. (Source: FHWA)

• **Land Use** – Refers to the manner in which portions of land or the structures on them are used, i.e. commercial, residential, retail, industrial, etc. (Source: FHWA)

• **Leading Pedestrian Intervals (LPI)** – Period of time during a traffic signal cycle in which pedestrians are given the "WALK" signal before conflicting left- and right-turns are permitted. LPIs are typically two to four seconds and work best with "No Turn on Red" restrictions. LPIs are often a low-cost, low-labor way to improve pedestrian crossings. (Source: D.C. Pedestrian Master Plan)

• **Level of Service (LOS)** – A scale of lettered “report card” type grades (“A” through “F”) that measures the amount of traffic that a transportation facility or intersection can accommodate, based on such factors as maneuverability, driver satisfaction, volume to capacity ratio, and delay. (Source: D.C. Comprehensive Plan)

• **Long-Range Transportation Plan (LRTP)** – A document resulting from regional or statewide collaboration and consensus on a region or state’s transportation system, and serving as the defining vision for the region’s or state’s transportation systems and services. In metropolitan areas, the plan indicates all of the transportation improvements scheduled for funding over the next 20 years. (Source: FHWA)

• **Low-Cost Transit** – Transit service that is available at a reduced or fully subsidized fare for certain users of the system.

• **Managed Lanes** – Usually used on limited access roadway system, managed lanes can be used to improve travel reliability and optimize person-carrying capacity through the implementation of a “management” strategy such as high-occupancy vehicle (HOV) and/or high-occupancy toll (HOT) restrictions.

• **Maryland-National Capital Park and Planning Commission (M-NCPCC)** – A bi-county agency empowered by the State of Maryland in 1927 to acquire, develop, maintain, and administer a regional system of parks within Montgomery and Prince George’s Counties, and to provide land use planning for the physical development of Prince George’s and Montgomery Counties. (Source: M-NCPCC)

• **Metropolitan Planning Organization (MPO)** – Regional policy body, required in urbanized areas with populations over 50,000, and designated by local officials and the governor of the state. Responsible in cooperation with the state and other transportation providers for carrying out the metropolitan transportation planning requirements of federal highway and transit legislation. (Source: FHWA)

• **Metropolitan Police Department (MPD)** – Primary law enforcement agency for the District of Columbia. It is the mission of the Metropolitan Police Department to safeguard the District of Columbia and protect its residents and visitors by providing the highest quality of police service with integrity,
compassion, and a commitment to innovation that integrates people, technology and progressive business systems. (Source: Metropolitan Police Department)

- **Mode** – A means of transportation, such as walking, automobile, transit, bicycle, etc. (Source: D.C. Comprehensive Plan)
- **Mode Share** – Mode share: The percentage of total trips using a given means of transportation, such as transit, automobile, or non-motorized.
- **Mode-choice Post Processing Tool (MCPP)** – Analysis tool used in moveDC Districtwide Travel Demand Model (DWTDM) to improve the sensitivity of modeled mode choice based on urban conditions. The DWTDM’s MCPP assigns point values for the presence of transportation features that trigger a modification to mode choice assignment in an area.
- **Monumental Core** – The general area encompassing the U.S. Capitol grounds, the National Mall and environs, the Tidal Basin, the Federal Triangle and Northwest Rectangle, the Southwest Federal Center, and East and West Potomac Parks. (Source: D.C. Comprehensive Plan)
- **Multimodal** – The availability of transportation options using different types (i.e. walking, automobile, transit, bicycling) within a system or corridor. (Source: FHWA)
- **Multi-Use Trail** – See Trail.
- **National Capital Planning Commission (NCPC)** – Central planning agency for the federal government within the National Capital Region, providing overall planning and guidance for federal lands and buildings in the District, and in portions of Maryland and Virginia. (Source: D.C. Comprehensive Plan)
- **National Park Service (NPS)** – A bureau of the U.S. Department of the Interior that manages all U.S. national parks and many other national monuments and conservation and historical properties. In the District, the NPS owns and operates trails and roadways in areas which include but are not limited to the National Mall, Rock Creek Park, East Potomac Park, and Anacostia Park.
- **Neighborhood Bikeway** – Neighborhood bikeways are low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming, way finding signage and pavement markings. (Source: DDOT)
- **Non-Motorized Mode Share** – For moveDC, this consists of trips made primarily by walking and biking.
- **Paratransit** – Comparable transportation service required by the Americans with Disabilities Act (ADA) of 1990 for individuals with disabilities who are unable to use fixed-route transportation systems; a variety of smaller, often flexibly scheduled-and-routed transportation services using low-capacity vehicles, such as vans, to operate within normal urban transit corridors or rural areas. These services usually serve the needs of persons that standard mass-transit services would serve with difficulty, or not at all. Often, the patrons include the elderly and persons with disabilities. (Source: FHWA)
- **Parkway** – A highway that has full or partial access control, is usually located within a park or a ribbon of park-like developments, and prohibits commercial vehicles. Buses are not considered commercial vehicles in this case.
- **Planning Area** – One of five geographic areas in the District designated by DDOT’s PPSA for transportation planning purposes, based primarily on the transportation networks, but also informed
by Ward and ANC boundaries wherever possible. moveDC recommended networks are displayed by planning area throughout the document. (Source: DDOT)

- **Protected Bike Lane** – See Cycle Track.
- **Rectangular Rapid Flashing Beacons (RRFB)** – Devices installed at crosswalks at unsignalized locations to increase driver awareness to the presence of pedestrians and crosswalks. RRFBs are usually installed attached to standard pedestrian crossings signage.
- **Regional and Non-Regional Bus Routes** – WMATA routes are regional if they cross a jurisdictional boundary, serve one or more regional activity centers (including downtown D.C.), operate primarily on arterial streets, and have high hourly boardings. Non-regional routes make up the remainder of the WMATA service in the District.
- **Residential Permit Parking (RPP)** – System used to help residents in neighborhoods with high parking demand and limited off-street parking by limiting the long-term use of on-street parking spaces to residents with permits. (Source: D.C. Comprehensive Plan)
- **Ridesharing, Dynamic or Real-Time** – Arranging shared rides with little or no advance notice, usually via mobile device applications. Some systems require or recommend a fee while others are free of charge.
- **Right-of-Way** – Land, property or interest therein acquired for or devoted to the District’s transportation purposes.
- **Runningway** – The configuration of the transit line. Runningways can either be shared or dedicated. Typical runningways configurations include median, center, or side.
- **Shared Travel Lane (for Transit)** – A roadway lane in which transit service operates in the same lanes as all vehicles (mixed flow).
- **Shared-Use Pathways** – See Trail.
- **Sidewalk** – Sidewalks are the part of the public space immediately adjacent to the roadway. The sidewalk area includes a pedestrian zone that must remain clear, both horizontally and vertically. (Source: D.C. Public Realm Design Manual)
- **Signalized** – Type of control at intersections using electrically operated traffic control devices. Signalized intersections allow the shared use of road space by separating conflicting movements in time and allocating delay, and can be used to enhance the mobility and safety of some movements. (Source: FHWA)
- **Slugging** – Slugging is a term for the practice where a driver picks up additional passengers at specific pickup or drop-off locations. The passengers are strangers and the rides are not prearranged. Typically, either passengers or drivers display a sign with their destination or call out the window. No money is exchanged. With one or more riders, the driver is eligible to use the region’s HOV facilities, such as I-395 in Virginia.
- **SmarTrip®** – A permanent, rechargeable card used to pay Metrorail and local bus system fares. Plastic, like a credit card, it is embedded with a computer chip that keeps track of the value of the card.
- **State of Good Repair** – Maintenance, replacement, and rehabilitation of capital assets, along with the development and implementation of transit asset management plans. (Source: FTA)
• **State Transportation Improvement Program (STIP)** – A staged, multi-year, statewide, intermodal program of transportation projects, consistent with the statewide transportation plan and planning processes as well as metropolitan plans, TIPs, and processes.

• **Stop-controlled** – intersections which are controlled by one or more “STOP” signs. Stop-controlled intersections can be minor-street stop controlled, in which traffic on the major road does not stop, or all-way stop-controlled in which all approaches must stop and a set of priority rules governs the flow.

• **Street Tree** – Tree planted in median or along sidewalks in the public right-of-way intended to enhance the visual quality of a street, provide shade, absorb pollutants and noise, and provide habitat for urban wildlife. (Source: D.C. Comprehensive Plan)

• **Streetcar** – A wheeled transit vehicle that runs on rails, operates within a street right-of-way, and is propelled by electricity. (Source: D.C. Comprehensive Plan)

• **Streetscape** – The landscape, infrastructure, and building elements that characterize a particular street or public space. (Source: D.C. Comprehensive Plan)

• **Traffic Signal Optimization** – Updating and improving the operations of a group signals. Improvements include replacing traffic control software and equipment as well as re-timing the signal progression to currently anticipated travel patterns.

• **Trail (also: Shared-Use Pathways; Multi-Use Trails)** – Paved facilities that provide a high quality walking and bicycling experience in an environment that provides separation from traffic. These types of paths can be constructed within a roadway corridor right-of-way, in their own corridor (such as a greenway trail or rail-trail), or be a combination of both. In some cases, there is a need for trails in addition to bike lanes on busy streets. Trails should not be used to preclude on-road bicycling but rather to supplement a system of on-road bicycle facilities for less experienced cyclists.

• **Transit** – Passenger transportation services, usually local in scope, that is available to any person who pays a prescribed fare. It operates on established schedules along designated routes or lines with specific stops and is designed to move relatively large numbers of people at one time. (Source: FHWA) For the purpose of moveDC, transit is defined as bus (local, commuter/regional, D.C. Circulator, high-frequency bus corridors), streetcar, high-capacity transit, Metrorail, commuter rail, and water taxis.

• **Transit Mode Technology** – Refers to the type of vehicle that is used to provide the transit service. With the exception of The District’s planned streetcar network, moveDC does not specifically identify the transit mode technology for high-capacity transit.

• **Transit Signal Priority (TSP)** – The preferential treatment of one vehicle class (such as a transit vehicle, emergency service vehicle, or a commercial fleet vehicle) over another vehicle class at a signalized intersection without causing the traffic signal controllers to drop from coordinated operations. (Source: National Transportation Communications for Intelligent Transportation Systems Protocol [NTCIP])

• **Transportation Demand Management (TDM)** – An overarching approach to influence travel behavior by mode, frequency, time, route, or trip length to reduce transportation demand and balance demand across all components of the transportation system.
• **Transportation Improvement Program (TIP)** – A document prepared by a metropolitan planning organization that lists projects to be funded with FHWA/FTA funds for the next one- to three-year period. (Source: FHWA)

• **Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program** – A funding program operated by USDOT that annually provides grants to state, regional, and local governments to fund projects that will improve the freight and passenger transportation networks around the country.

• **Tree Canopy** – The cover formed by the leafy upper branches of trees in a forest. (Source: D.C. Comprehensive Plan)

• **Tunnel** – An enclosed roadway for motor vehicular traffic with vehicle access limited to portals, regardless of type of structure or method of construction. Tunnels are structures that require, based on owner’s determination, special design considerations that may include lighting, ventilation, fire protection systems, and emergency egress capacity. (Source: FHWA)

• **Unsignalized** – Type of control for intersections that does not involve electrically operated traffic control devices. Unsignalized intersections are generally controlled by stop or yield signs on at least one of the approaches.

• **Vehicle Miles Traveled (VMT)** – Miles of travel by all types of motor vehicles as determined by actual traffic counts and established estimating procedures. (Source: FHWA) In modeling: The overall distance that is traveled by all vehicles on a network. Often used to evaluate overall system use and performance.

• **Virginia Megaprojects** – A series of large-scale transportation improvement projects designed to ease congestion and increase transportation choice in Northern Virginia. Megaprojects are managed by the Virginia Department of Transportation (VDOT).

• **Volume to Capacity (V/C) Ratio** – The ratio of the counted or forecast number of vehicles to the designated number that a specific roadway can accommodate. Evaluating V/C ratios is one of the ways to understand where congestion may exist on streets under existing and future traffic conditions. In theory, when a V/C ratio exceeds 1.0, it means that a roadway is over-capacity—more demand (traffic) than capacity (space for that traffic).

• **Washington Metropolitan Area Transit Authority (WMATA or Metro)** – The Washington Metropolitan Area Transit Authority was created by an interstate compact in 1967 to plan, develop, build, finance, and operate a balanced regional transportation system in the national capital area. Metro operates Metrorail, Metrobus, and its Paratransit service, MetroAccess. (Source: WMATA)
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