# Chapter 4
# Service Expansion Projects

## 1.0 Introduction

This chapter has two key purposes. The first is to provide a demographic context for transit service in Alexandria, with a focus on understanding changes over time in key demographic factors within Alexandria such as population and employment as well on key demographic indicators of potential transit need such as household income and auto ownership.

The second purpose of this chapter is to outline service expansion projects for each of the transit service providers within the City of Alexandria. The projects described in this chapter provide the framework for the financially constrained operations plan described in Chapter 5 of this document. The basis of the service expansion projects list is an extensive range of studies and analyses completed over the last five years by the City, the Alexandria Transit Company (DASH) and WMATA that have identified a large universe of proposed transit service improvements. These improvements are focused on providing more convenient service to existing and potential new riders as well as meeting increased transit demand in existing and new corridors within the City.

This chapter outlines the full universe of proposed service improvements based on the recommendations from this wide range of studies and analyses. This list is financially unconstrained and represents the full range of anticipated transit needs for all transit providers in the City. The sources for this list of expansion projects include:

- The Alexandria Transit Company (ATC) Comprehensive Operations Analysis and the ATC FY 2016 Transit Development Program.
- Multiple WMATA Service Evaluation and Priority Corridor Network Studies covering Metrobus service within Alexandria as well as ongoing service evaluations completed by WMATA operations and service planning staff.
- Discussions with technical staff at the City of Alexandria, Alexandria Transit Company, WMATA, and the Virginia Department of Rail and Public Transportation regarding transit needs and goals within Alexandria.
- Technical analysis completed in Chapter 3 of this Transit Development Plan, with a focus on identifying and meeting the unmet transportation needs of Alexandria residents.
- Discussions with the Transit Development Plan Project Management Team regarding the City's, Region's, and State's transit goals.
- The West End Transitway planning process currently underway. This project is focused on the development of a premium service utilizing dedicated transit lanes and connecting the west-end of Alexandria with key regional residential and employment centers as well as other key transit corridors.

General service expansion themes derived from these different sources include:

- Expansion of Alexandria Transit Company DASH service frequencies to meet "urban service level" targets. This proposed expansion focuses predominantly on improvements in service frequency on existing services, with an ultimate focus on providing service that is more convenient to riders and which allows riders to randomly arrive at a stop and be assured a bus will arrive within a reasonable amount of time.
- Implementation of weekend service on DASH routes where weekend service is not currently provided.
- Implementation of new neighborhood circulator services that are focused on providing greater transit connectivity within existing and planned high density neighborhoods.

- Consolidation and rationalization of service within Old Town and the introduction of an Old Town Circulator in order to provide a more focused and customer-friendly service within the heart of Alexandria.
- Service improvements and rationalizations on WMATA Metrobus Lines within Alexandria, with a focus on improved connections with key employment and residential centers in Arlington County and enhanced productivity on existing services.
- Improved inter-jurisdictional services focused on improved connectivity for Alexandria residents accessing employment centers and other destinations outside Alexandria and for non-residents entering Alexandria for employment and other purposes.
- Service and facility improvements on the WMATA Metrobus 29K, N Line, including a new MetroExtra service in the 29K, N service corridor.
- Premium service utilizing dedicated transit lanes, where feasible. Key premium transit corridors identified for future implementation include:
    - In the west end of Alexandria and connecting to current and proposed major employment and activity centers at Van Dorn, Landmark, Mark Center, Skyline, and the Pentagon. This project is currently in the NEPA and Conceptual Engineering phase of project development.
    - Within the Duke Street Corridor.

A priority subset of the of the full universe of service improvements identified in this chapter, financially constrained based on estimated available funding over the six-year time frame of this study, is the subject of Chapter Five of this document (Chapter Five outlines financially constrained service improvements).

The remainder of this chapter outlines the demographic context for transit service in Alexandria as well as the unconstrained universe of service expansion projects identified in each of the sources noted above.

## 2.0 Demographic / Socioeconomic Characteristics

This section outlines the demographic characteristics of the City of Alexandria, with a specific focus on demographic characteristics that will impact transit markets within the City as well as needed service modifications and improvements. Demographic characteristics evaluated include population and forecasted population growth, employment and forecasted employment growth, and demographic characteristics that identify potential transit dependent populations. Population and population growth is evaluated first.

### 2.1 Population and Forecasted Population Growth

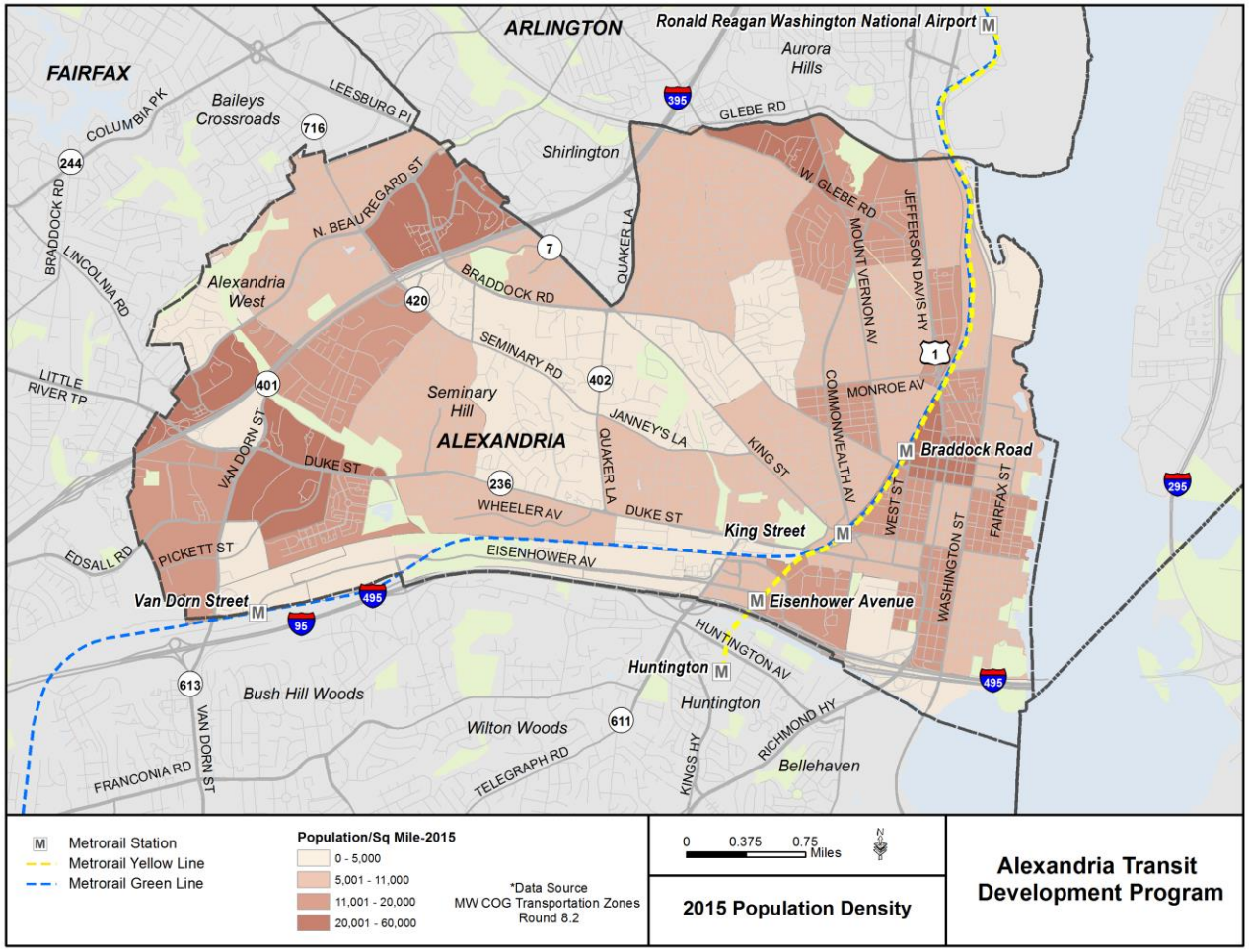
Based on the Metropolitan Washington Council of Governments (MWCOG) 2015 population and employment forecasts, the City of Alexandria's 2015 population is 149,100, representing a 6.6% increase from the 2010 Census. MWCOG forecasts estimate the City's population will increase to 158,500 or 6.3% by 2020. Population is forecasted to increase to 166,900 or an additional 5.3% by 2025.

Figures 4.1 through Figure 4.3 show current and forecasted population densities by Traffic Analysis Zone (TAZ) in 2015, 2020, and 2025. In 2015, the highest population densities within the City are located in the Alexandria West End, along Beauregard Street, along Duke Street near the Landmark Mall, North Old Town near the Braddock Road Metrorail Station, Carlyle, and Arlandria. These high density population

areas often correspond to the highest trip generation TAZs in the unmet trip demand analysis outlined in Chapter 3.

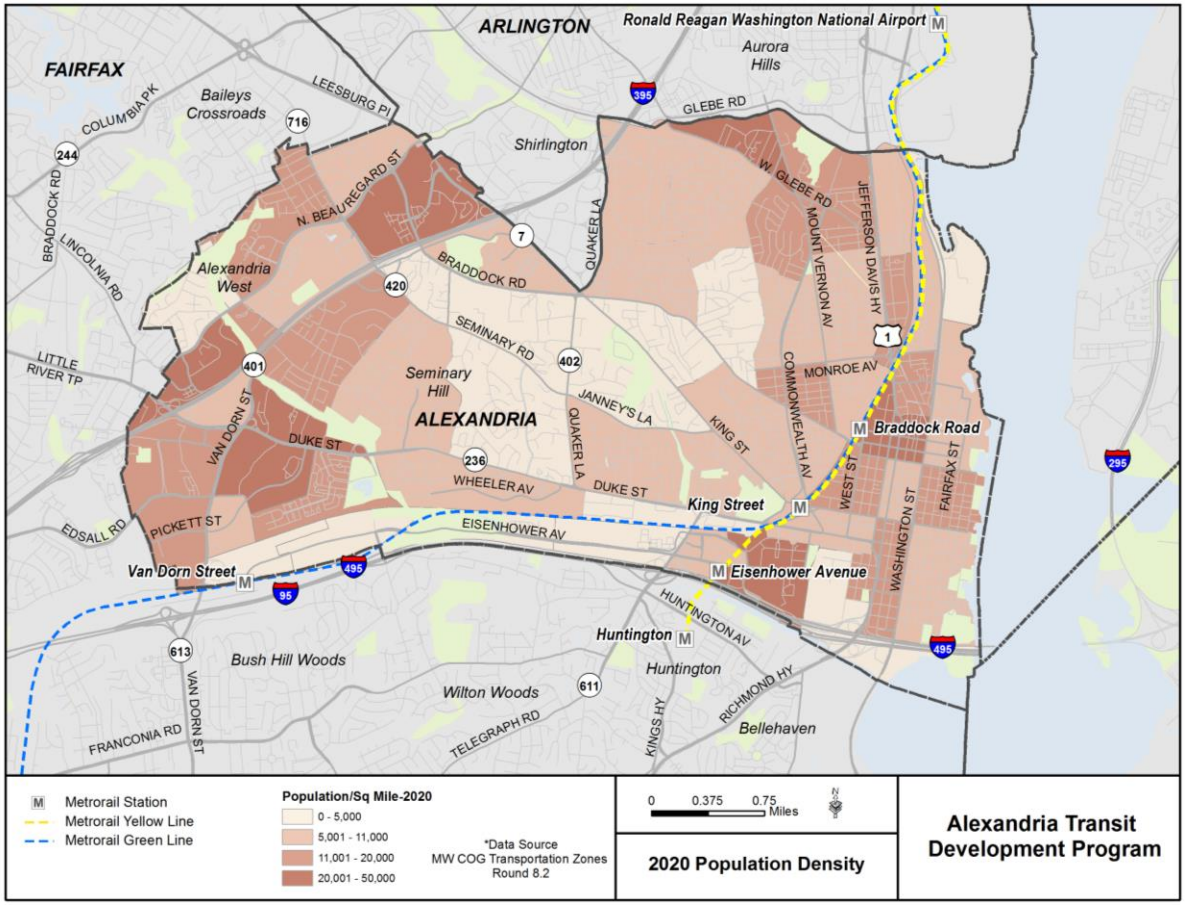
In 2020, forecasted population densities will grow in the Carlyle area, and in the Beauregard corridor, especially on the west side of Beauregard Street (current high densities along Beauregard are concentrated on the east side). In 2025, in addition to the areas already noted, there will be forecasted density growth in the northern end of Potomac Yard, as that area is further developed.

**Figure 4.1 – City of Alexandria 2015 Population Density**



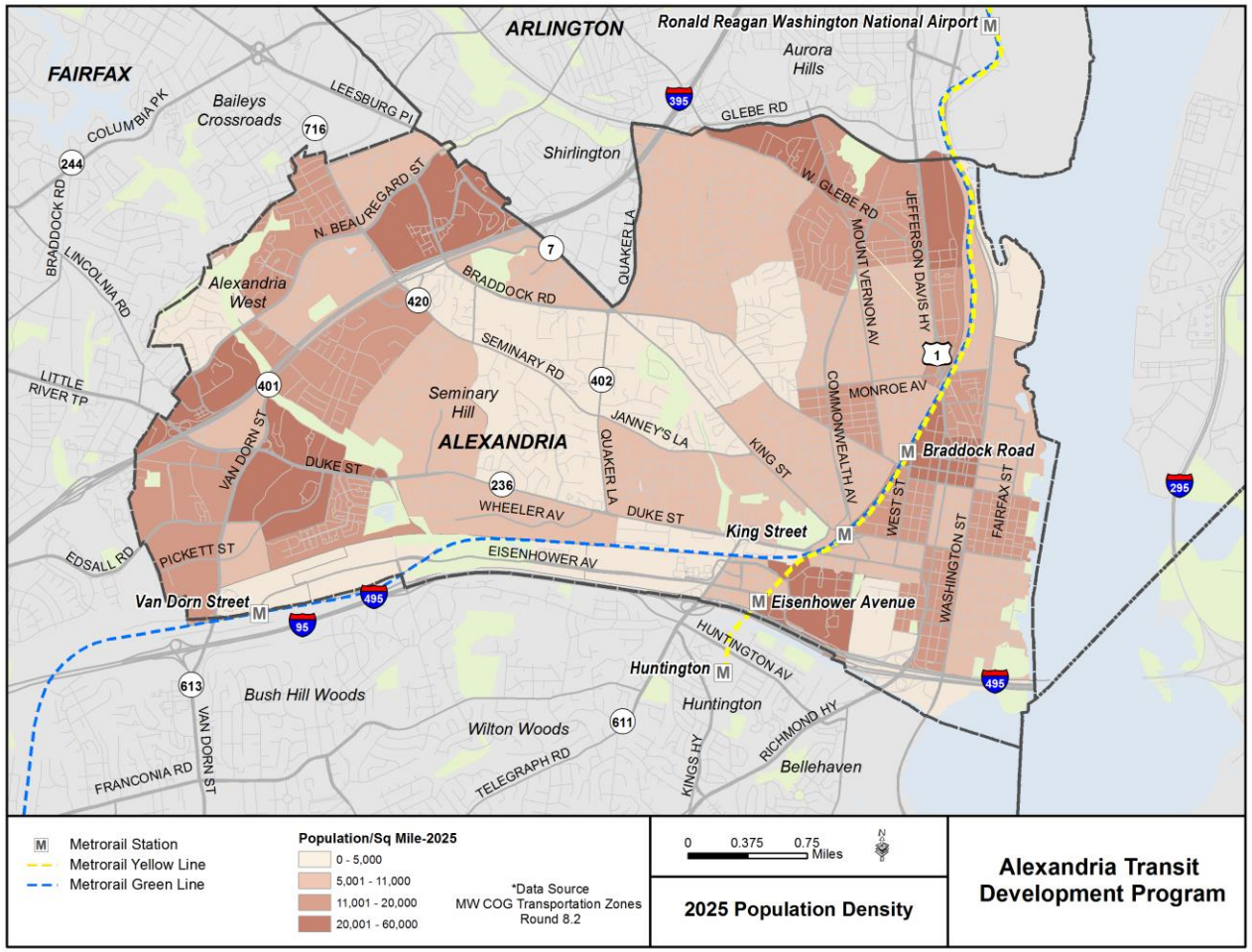

Source: MWCOG Population and Employment Forecasts

**Figure 4.2 - City of Alexandria 2020 Forecasted Population Density**




Source: MWCOG Population and Employment Forecasts

**Figure 4.3 - 2025 Population Density**



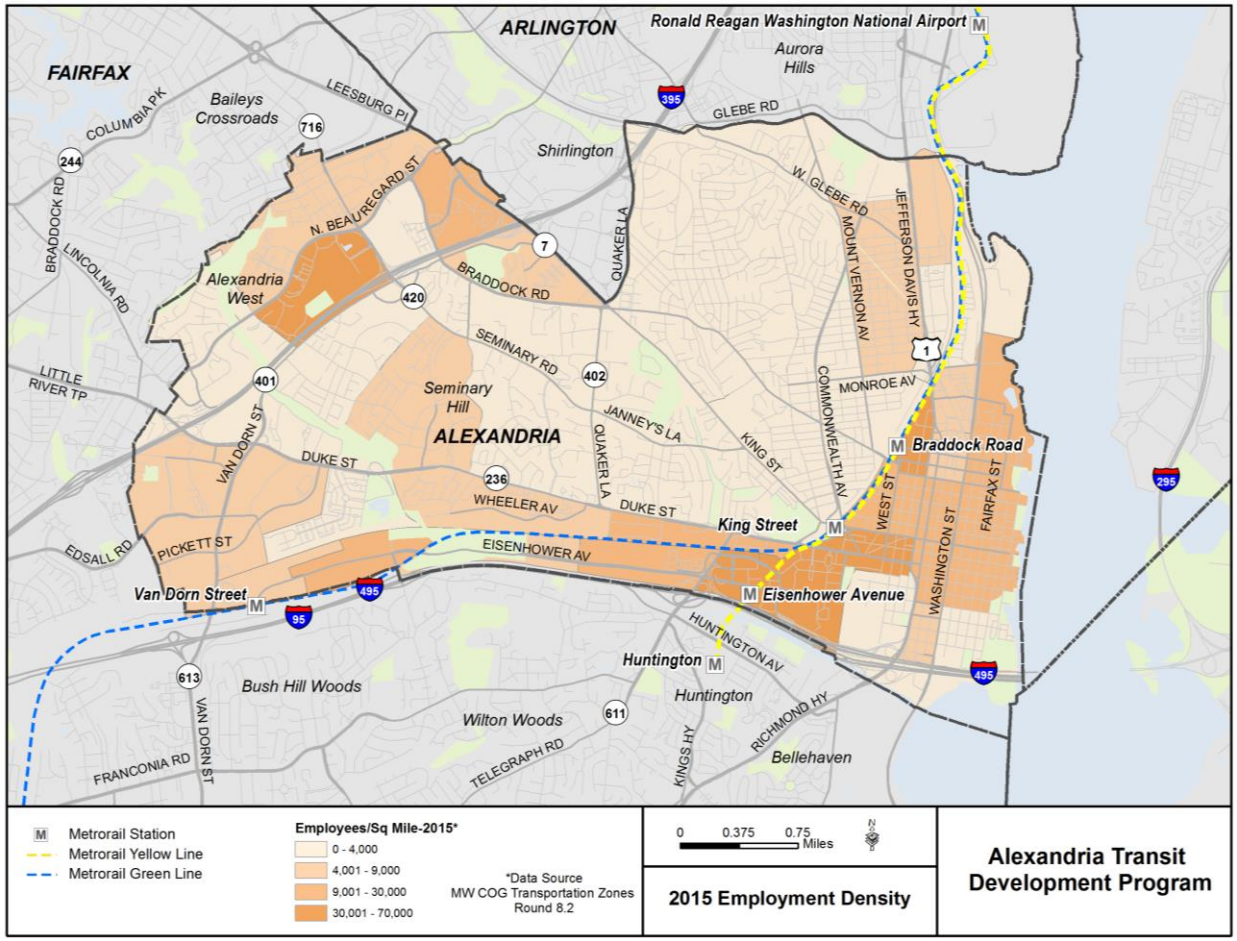

Source: MWCOG Population and Employment Forecasts

## 2.2 Employment and Forecasted Employment Growth

Based on MWCOG population and employment forecasts, the 2015 forecasted employment in the City of Alexandria is 117,700, representing an 8.0% increase from the 2010 estimate. MWCOG forecasts that employment in the City of Alexandria will increase to 124,100, or 5.4%, by 2020. Employment is forecasted to further increase to 135,400 or another 9.1%, by 2025.

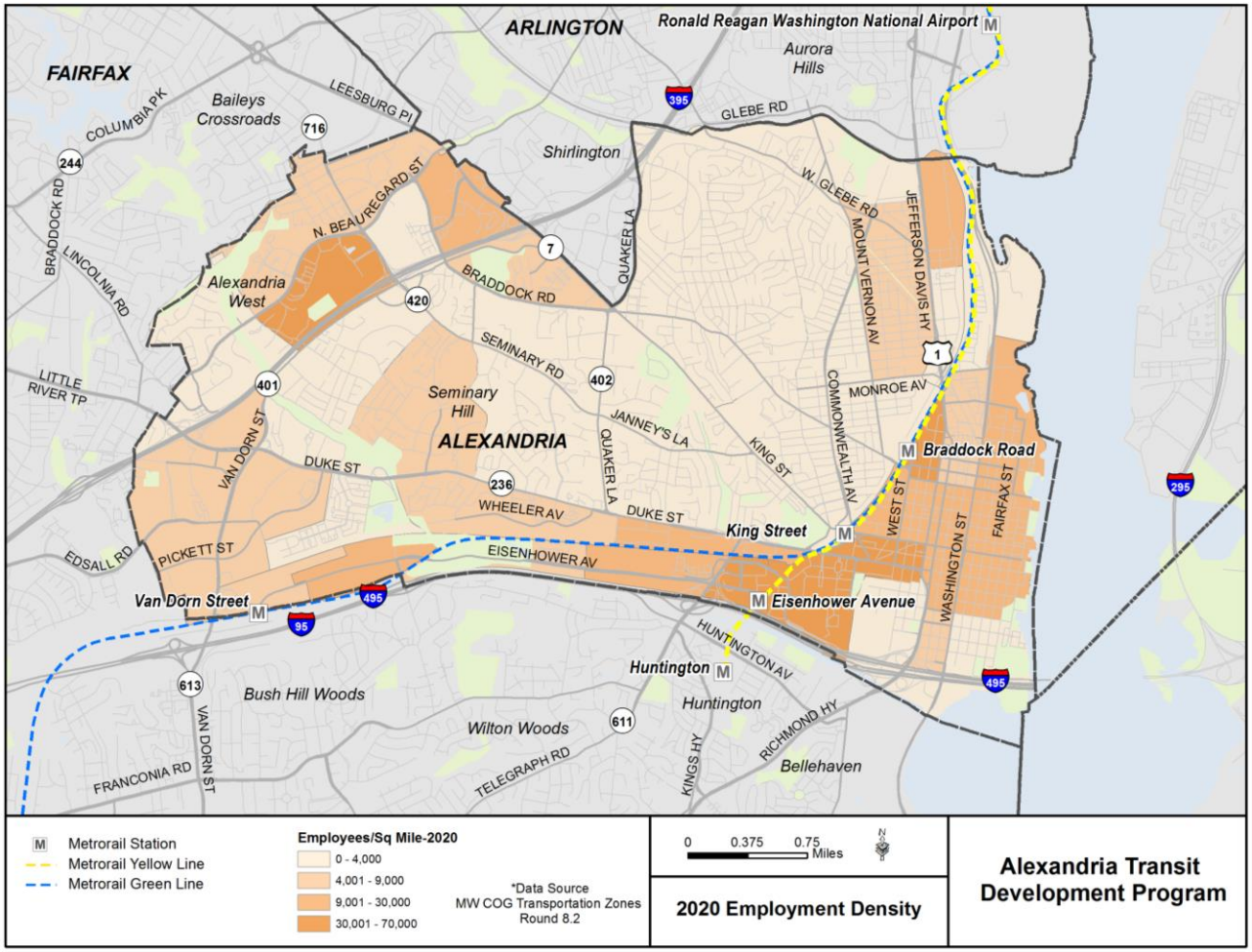
Figures 4.4 through Figure 4.6 show employment densities by Transportation Analysis Zone in 2015, 2020, and 2025. In 2015, the highest employment densities in the City are located in Carlyle, Old Town near the King Street Metrorail Station, North Old Town near the Braddock Road Metro, and the Mark Center. In 2020, employment densities are forecasted to increase in the redevelopment areas of Landmark Mall and Potomac Yard (North). By 2025, Potomac Yard (South), North Old Town, the area around the Van Dorn Street Metrorail Station and West Eisenhower Avenue, along Beauregard Street, and in the vicinity of the Landmark Mall are all forecasted to experience employment growth.

**Figure 4.4 - City of Alexandria 2015 Employment Density**



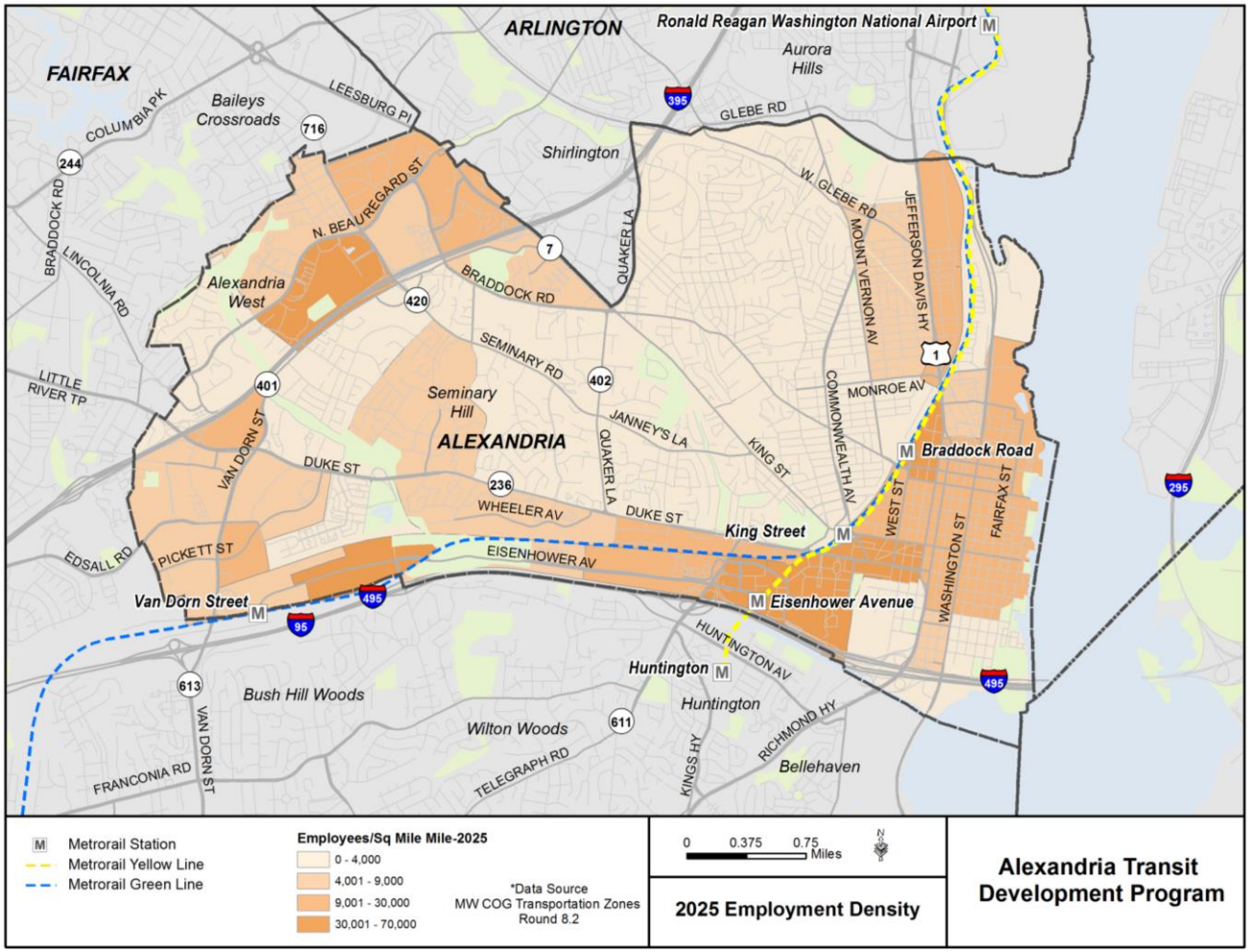

Source: MWCOG Population and Employment Forecasts

**Figure 4.5 – City of Alexandria 2020 Employment Density**




Source: MWCOG Population and Employment Forecasts

**Figure 4.6 – City of Alexandria 2025 Employment Density**




Source: MWCOG Population and Employment Forecasts

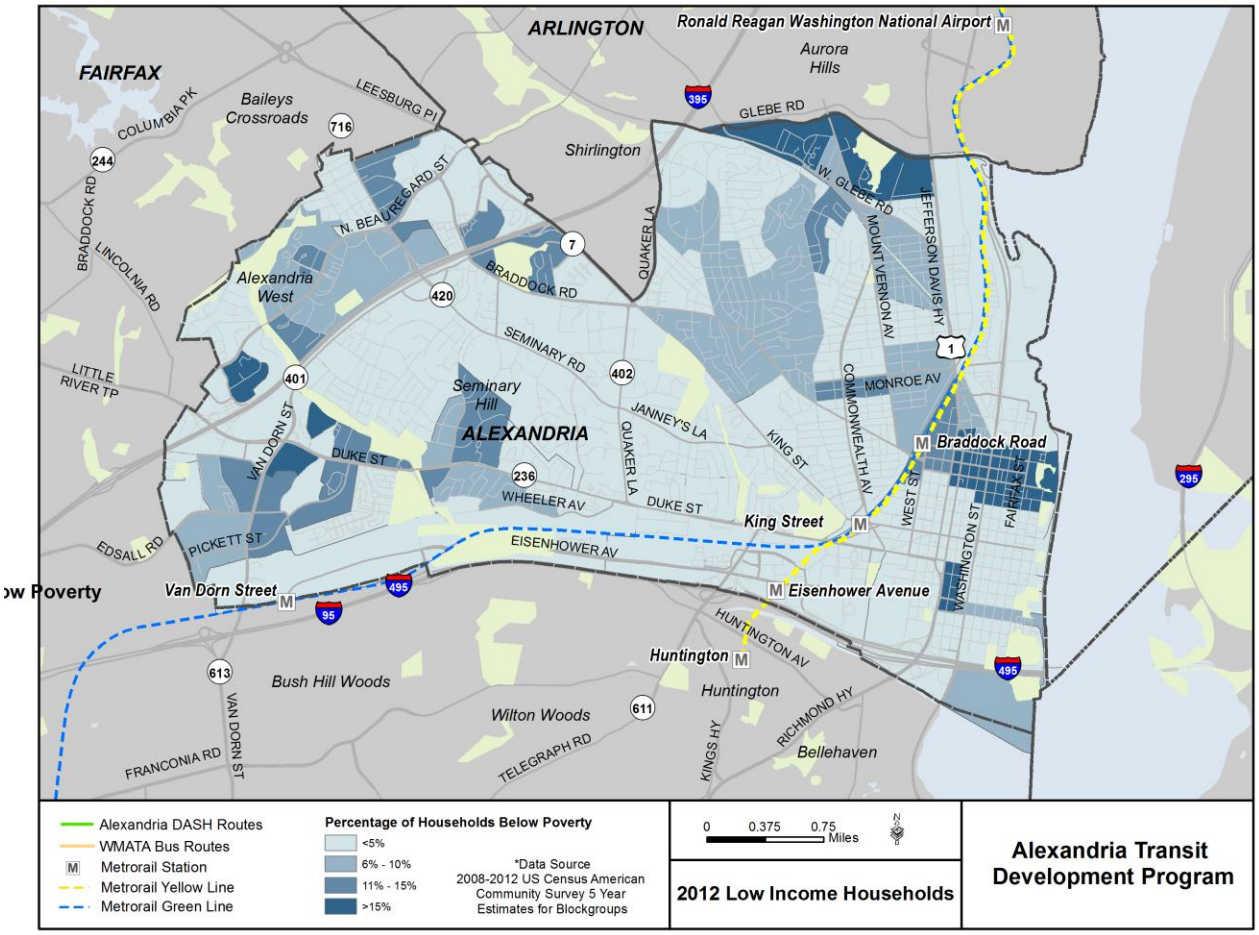
## 2.3 Transit Dependent Populations

This section analyzes 2012 census block level data to identify concentrations of likely transit dependent populations located within the City of Alexandria. Likely transit dependent populations were identified based on specific demographic characteristics including those 1) without private transportation, 2) elderly (over age 65), and 3) persons below poverty levels as defined by the U.S. Census Bureau. The first analysis is of low income populations within the City.

### 2.3.1 Low Income Populations

Figure 4.7 shows the percentage of households within Alexandria below poverty in 2012, by census block group. Generally areas at the highest threshold (>15% of households living below the poverty level) are spread throughout the City and include Arlandria, North Old Town near the Braddock Road Metrorail Station, Seminary Hill off of Duke Street, the intersection of Van Dorn & Duke Streets, and the West End Corridor (Beauregard Street North). Each of these concentrations of households living below the poverty level is well served by either DASH or WMATA Metrobus service.

**Figure 4.7 - 2012 Percentage of Households below Poverty**

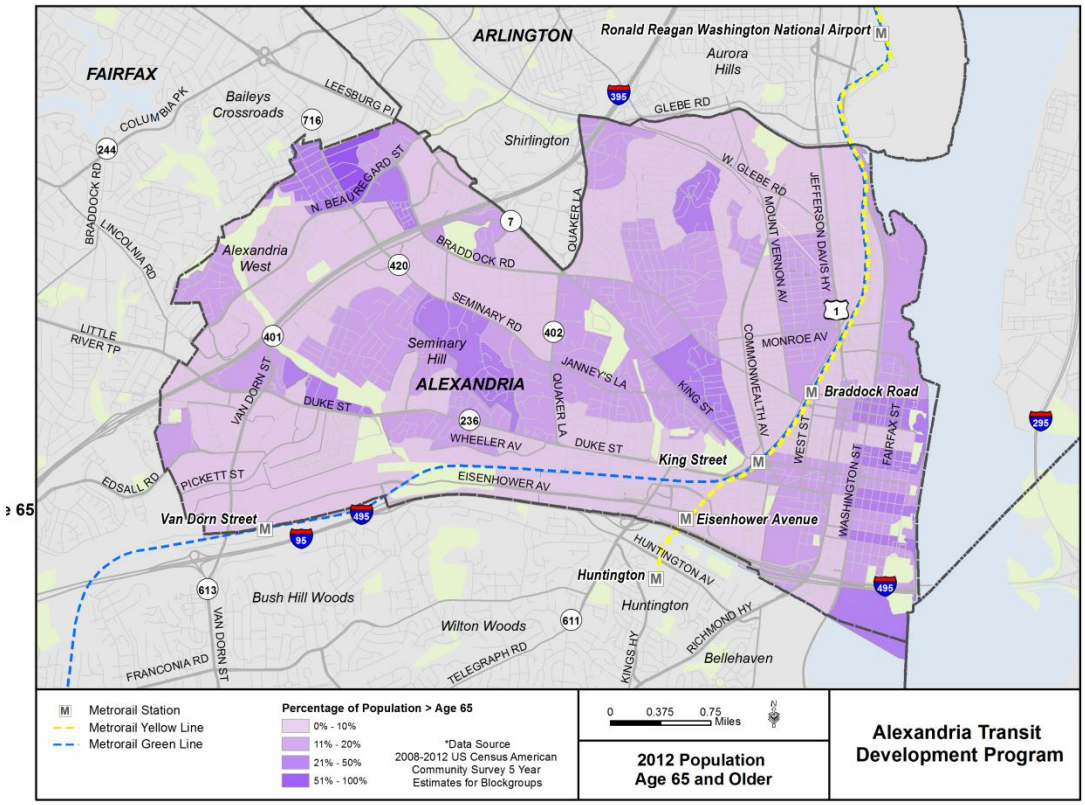



Source: U.S. Census Data (2012)

### 2.3.2 Population over Age 65

Figure 4.8 shows concentrations of populations over 65 within the City of Alexandria. Areas where over 50% of the population is over 65 are generally found spread throughout the City. Specific concentrations include Seminary Hill, Old Town, Old Town North, North Ridge/Rosemont, and the Alexandria West End corridor along Beauregard Street. Each of these areas is well served by transit, though portions of Seminary Hill are beyond walking distance to DASH services along Duke Street or Seminary Road.

**Figure 4.8 - 2012 Population over Age 65**

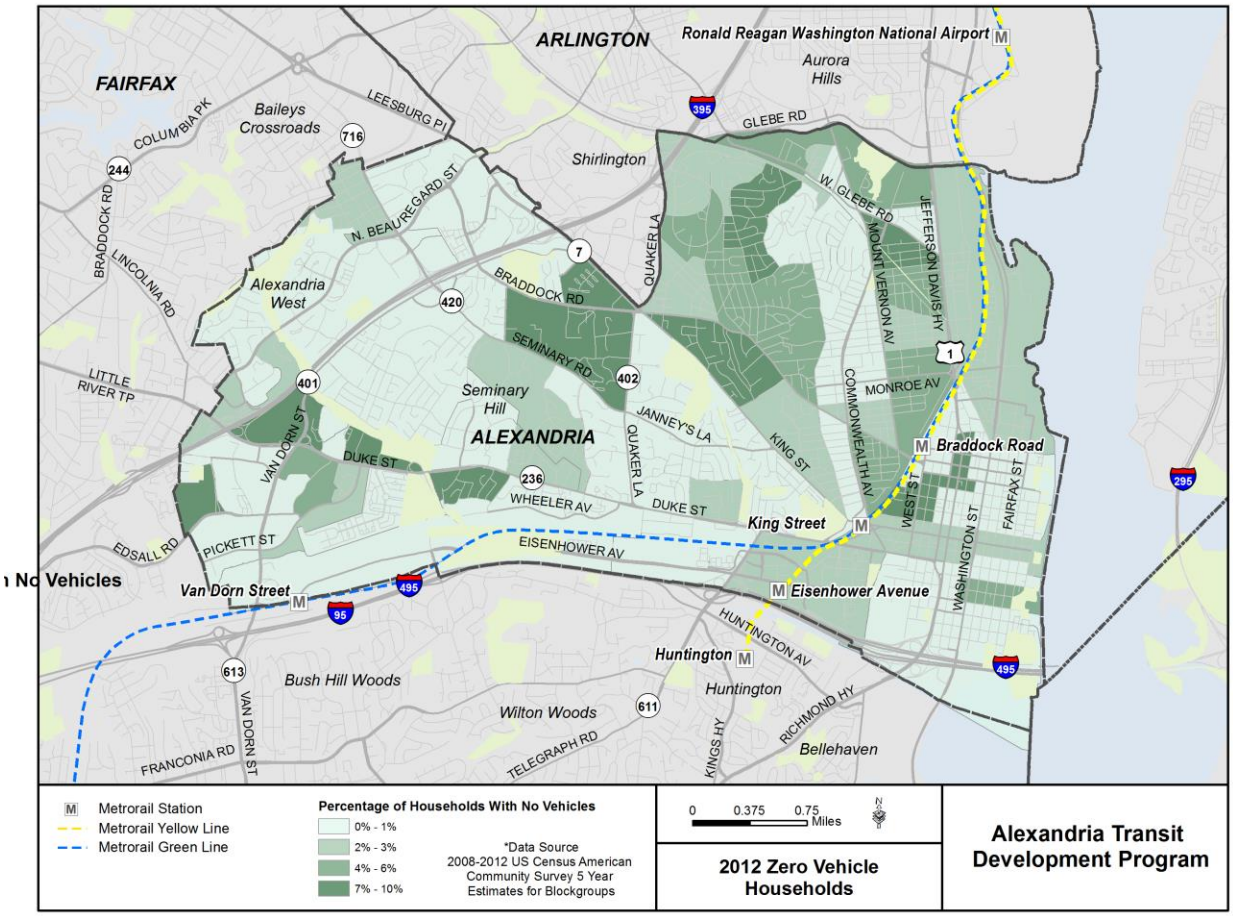



Source: U.S. Census Data (2012)

### 2.3.3 Zero Car Households

Figure 4.9 shows concentrations of households with zero vehicles within the City of Alexandria. Concentrations of over 50% zero car households are generally found throughout the City including in Arlandria, Landmark/Van Dorn, Duke Street, Fairlington/Bradlee, North Ridge/Rosemont, and Del Ray. It should be noted that the zero-car household percentages in some areas of the city are likely skewed by large institutional land uses such as Inova Hospital, Senior Centers, and large shopping centers. The areas of low auto ownership are all well served by either DASH or WMATA Metrobus service.

**Figure 4.9 - 2012 Zero Vehicle Households**




Source: U.S. Census Data (2012)

# 3.0 DASH Service Improvements

DASH completed a detailed Comprehensive Operations Analysis (COA) in 2014 which identified an extensive range of service expansion projects/improvements in three key areas. Each of these is described in greater detail below.

## 3.1 Enhanced Service Frequencies

The City of Alexandria is a densely developed urban area and the focus of the enhanced service frequency recommendations contained in the COA is to develop a transit network that reflects these urban characteristics. To this end, the COA has identified an extensive set of service frequency improvements throughout the DASH system. Ultimately, the intent of these service frequency expansion recommendations is provide a service level such that a passenger can arrive at a stop randomly without utilizing a timetable but be assured that a bus will arrive within a reasonable time. This service frequency goal reflects a level of service convenience that is in concert with the true urban nature of Alexandria.

The specific service frequency recommendations are outlined below in Table 4.1. The order of the recommendations contained in Table 4.1 represents the implementation priority for the full set of improvements but the actual implementation schedule is indeterminate at this point given limited resources available to support implementation (more detail is provided in Chapter 5 on the service frequency expansion recommendations that have funding available to support implementation. It is projected that funding will be available for two of the proposed frequency expansions over the six-year life of this TDP).

These frequency expansions and the additional buses required in the DASH revenue vehicle fleet to support these expansions are not included in in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

**Table 4.1 – DASH Service Frequency Improvement Recommendations**

| Route | Day of Week/Time Period of Proposed Enhancement | Current Service Frequency | Proposed Service Frequency | Estimated Annual Ridership Change | Estimated Total Operating Cost Total | Estimated Annual Revenue | Estimated Annual Net Operating Cost | Capital Cost Associated with Improvement |
|---|---|---|---|---|---|---|---|---|
| AT1 | Weekday Peak | 20-30 | 15 | 107,700 | $430,852 | $110,931 | $319,921 | $1,950,000 |
| AT1 | Weekend All Day | 60 | 30 | 88,800 | $243,653 | $91,464 | $152,189 | $0 |
| AT8 | Weekday Off Peak | 30 | 15 | 65,209 | $608,157 | $67,165 | $540,992 | $0 |
| AT8 | Weekend All Day | 20 (on trunk) | 15 | 134,700 | $333,326 | $138,741 | $194,585 | $0 |
| AT5 | Weekday Peak and Off Peak | 20 peak<br>30 off-peak | 15 peak<br>20 off-peak | 177,500 | $1,467,584 | $182,825 | $1,284,759 | $1,950,000 |
| AT2 | Weekday Peak and Off Peak | 20 peak<br>30 off-peak | 15 peak<br>20 off-peak | 135,900 | $730,032 | $139,977 | $590,055 | $1,950,000 |
| AT9 | Saturday All Day | 60 | 30 | 80,200 | $134,059 | $82,606 | $51,453 | $0 |
| AT2 | Weekend All Day | 60 | 30 | 98,800 | $157,180 | $101,764 | $55,416 | $0 |
| AT5 | Sunday All Day | 60 | 30 | 61,400 | $203,055 | $63,242 | $139,813 | $ |
| AT3 | Weekday Peak | 20 | 15 | 21,000 | $189,499 | 21,630 | $167,869 | $1,300,000 |
| AT4 | Weekday Peak | 20 | 15 | 22,600 | $191,100 | $23,278 | $167,822 | $1,300,000 |
| AT10 | Weekday Peak | 30 | 15 | 37,500 | $246,140 | $38,625 | $207,515 | $1,300,000 |
| AT10 | Sunday All Day | 60 | 30 | 3,700 | $43,790 | $4,811 | $38,979 | $0 |
| AT9 | Weekday Peak | 30 | 15 | 88,000 | $861,984 | $90,640 | $771,344 | $1,950,000 |
| AT8 | Weekday All Day | 30 | 10 | 208,200 | $1,390,869 | $214,446 | $1,176,423 | $3,250,000 |
| AT1 | Weekday Peak | 15 (further improvement from recommendation above) | 10 | 95,600 | $526,524 | $98,468 | $428,056 | $1,950,000 |
| AT5 | Weekday Peak | 15 (further improvement from recommendation above) | 10 | 90,800 | $946,680 | $93,524 | $853,156 | $3,900,000 |

| Route | Day of Week/Time Period of Proposed Enhancement | Current Service Frequency | Proposed Service Frequency | Estimated Annual Ridership Change | Estimated Total Operating Cost Total | Estimated Annual Revenue | Estimated Annual Net Operating Cost | Capital Cost Associated with Improvement |
|---|---|---|---|---|---|---|---|---|
| AT2 | Weekday Peak | 15 (further improvement from recommendation above) | 10 | 70,800 | $438,965 | $72,924 | $366,041 | $1,950,000 |
| AT8 | Weekend All Day | 15 (further improvement from recommendation above) | 10-20 | 115,800 | $405,542 | $119,274 | $286,268 | $0 |
| AT9 | Weekday All Day | 15 (further improvement from recommendation above) | 10 | 146,800 | $1,388,101 | $151,204 | $$1,236,897 | $2,600,000 |
| AT6 | Weekday Peak | 15 | 10 | 38,000 | $278,835 | $38,870 | $239,965 | $1,300,000 |
| AT10 | Weekday Peak | 15 (further improvement from recommendation above) | 10 | 35,500 | $287,949 | $36,565 | $251,384 | $1,300,000 |
| AT7 | Weekday Off Peak | 60 | 30 | 16,600 | $160,669 | $17,098 | $143,571 | $0 |
| AT1 | Weekday Off Peak | 30 | 20 | 42,900 | $181,522 | $44,187 | $137,335 | $0 |

## 3.2 Expand Days of Service

There is one recommendation included in the FY 2016 ATC Transit Development Program for expansion of service to a day on which the service does not currently run. Specifically, the FY 2016 Program recommends that service on the DASH AT9 be expanded to run on Sunday (AT9 service currently runs on weekdays and Saturdays). The service would run at a 60 minute service frequency throughout the day. The schedule for this expansion is indeterminate due to the current lack of financial resources for implementation. Further, this recommendation is not included for implementation in the constrained operating plan (see Chapter 5) covering the six-year time frame of this TDP.

The estimated annual ridership for this service expansion is 92,000. The estimated annual operating cost is $106,329, estimated revenue is $94,760 and the estimated net annual operating cost is $11,569. There would be no capital cost associated with this improvement. This improvement is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 3.3 New Service/Restructuring of Existing Service

A review of Chapter 3 shows that service coverage within the City, especially during the two peak periods, is quite extensive, with nearly no part of Alexandria not having some form of transit accessibility. New services were proposed, however, as part of the COA and the FY 2016 Transit Development Program. These new services are not focused on providing additional service coverage but rather to provide more direct and convenient service in high density portions of the City as well as parts of the City slated for significant redevelopment. A summary of each proposed new service initiative is outlined below.

### 3.3.1 Old Town Circulator/Old Town Service Restructuring

Currently Old Town Alexandria is served by a number of different DASH routes running at different service frequencies and with different routings. These multiple routes can lead to rider confusion regarding which services they can utilize to reach their final destination. The proposed circulator would provide a consistent service in the Old Town area running every 15 minutes throughout the day. This single service would have a unique brand that separates it from current DASH services and which will give riders greater comfort regarding routing, destinations served, and service frequencies. As part of this service implementation, the AT2 and AT5 services, which currently run to the Braddock Road Metro via Old Town, would terminate at the King Street Metrorail Station, thus providing enough financial savings to fund the implementation of the Circulator.

The schedule for implementation of this recommendation is indeterminate and is not included in the operating plan for the six-year time frame of this TDP. The estimated annual ridership for this service expansion is 145,700. Due to the service restructuring on the AT2 and AT5, the estimated net cost of this overall recommendation is $0. This recommendation is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

### 3.3.2 Eisenhower Circulator

This Circulator service would connect residential and commercial complexes located between the Eisenhower and King Street Metrorail Stations. This Circulator would provide direct and convenient service between the two Metrorail Stations and would also provide enhanced access to employment centers along the route alignment, including the Carlyle employment and residential center and the Eisenhower East redevelopment area. It would also provide direct and convenient connections between additional residential areas along the alignment to the two Metrorail stations as well as other bus routes at the two stations. The service would run on weekdays only, with a 10-minute peak service frequency and a 15-minute off-peak service frequency. The service would require an estimated three additional vehicles in the fleet.

The schedule for this expansion is indeterminate due to the current lack of financial resources for implementation. Further, this recommendation is not included for implementation in the financially constrained operating plan (see Chapter 5) covering the six-year time frame of this TDP.

The estimated annual ridership for this service expansion is 68,850. The estimated annual operating cost is $600,892, estimated revenue is $70,915 and the estimated net annual operating cost is $529,977. The estimated capital cost associated with this improvement is $1,950,000. This improvement and the associated new vehicles to provide the service is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

### 3.3.3 Van Dorn Circulator/AT 7 Restructuring

The Van Dorn Circulator will run in the southwest portion of Alexandria, centered on the Van Dorn Metrorail station and the Landmark Mall. Major streets served by this new circulator will include Pickett Street, Holmes Run Parkway, Van Dorn Street, Stevenson Avenue, Yoakum Parkway, and Edsall Road. This circulator service will replace a portion of the current AT7 in order to better match service levels to rider demand as well as to provide frequent feeder service to the proposed West End Transitway (the AT7 currently runs along Eisenhower Avenue via the Van Dorn Metrorail station before terminating at the Landmark Mall). Under this change the AT7 would terminate at the Van Dorn Metrorail. . The new circulator service would run on both weekdays and weekends at a consistent 15 minute service frequency throughout the day. This new service would require an estimated six additional vehicles in the fleet.

The schedule for this expansion is indeterminate due to the current lack of financial resources for implementation as well a precise understanding of the implementation schedule for the West End Transitway. Further, this recommendation is not included for implementation in the financially constrained operating plan covering the six-year time frame of this TDP.

The net estimated annual ridership change resulting from this combined service change is 201,727. The estimated operating cost of the combined changes is $2,435,422 and the estimated combined revenue is $207,779. The net cost of the combined change after accounting for revenue is $2,227,643. The estimated capital cost associated with the combined improvement is $3,250,000. This improvement and the associated new vehicles to provide the service is not included in the State's Six Year Improvement Program (SYIP), the Washington

Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.0 WMATA Service Improvements

WMATA Bus Planning staff has undertaken an extensive service evaluation of its bus lines regionally over the last 5-6 years through ongoing staff evaluation as well as through two key planning initiatives: 1) the WMATA Priority Corridor Service Restructuring Studies and; 2) WMATA Service Evaluation Studies. The recommendations from this staff work as well as these studies has focused on ensuring adequate service levels in high demand corridors, improved transit connections between key regional activity centers, improved productivity, and the most productive allocation of scarce financial resources between WMATA lines.

The recommendations resulting from these different evaluations are outlined below.

### 4.1 Restructuring of 9A and 10A Service – Utilize Savings to Improve Service on Other Lines

This potential service change has been developed by WMATA staff with a focus on re-allocating resources in order to address service deficiencies on two high ridership lines while also addressing low productivity. The potential service change is outlined below. It is very important to note that no firm decision on whether this service change will move forward has been made. It will be presented to the public in September 2015 and then a final decision will be made based on public input as well as a technical analysis of the impacts of the change.

The key elements of this potential service change are as follows:

- Current 9A service would be eliminated. The implementation of the Metroway service, in concert with 10 Lines parallel service, made nearly all of the 9A Line duplicative of other service. The one portion of the 9A that is unique - between Franklin Street, located north of the Capital Beltway, and the Huntington Metrorail Station - would be served by re-routed 10A service.
    - The re-route of the 10A service would have an impact on riders boarding at Hunting Point, south of the Capital Beltway. Currently, the combined service frequency from Hunting Point is 15 minutes throughout the day. This combined frequency is based on the 10B leaving the Hunting Point terminal every 30 minutes and either the 10A or the 10R leaving the terminal every 30 minutes (the 10R service runs from Hunting Point during the peak periods while the 10A serves the terminal during the off-peak). With this service change, only the 10B service would run from Hunting Point (see below for more detail on changes to the 10R associated with this potential service change), which would provide riders there a 30 minute service frequency. Based on daily ridership from Hunting Point as well as WMATA service standards, this 30 minute service frequency would be reasonable.
- The 10R and 10S routes would be eliminated. These two routes are services that provide direct service between Alexandria and Rosslyn in order to supplement Blue Line service. The 10R runs in the peak direction in the AM and PM peak and runs between Hunting Point and Rosslyn via Washington Street, Mount Vernon Avenue, Crystal City, and Jefferson Davis Highway. The 10S is

reverse peak service and runs between Rosslyn and the Braddock Road Metro Station via Jefferson Davis Highway and Washington Street.

- The savings resulting from the elimination of the 9A, 10R, and 10S services would support service improvements on two existing services:
    - Sunday 10B service frequency would be improved from every 60 minutes to every 30 minutes. The 10B is the key surface transit connection between Alexandria and Arlington and the current 60 minute service frequency has been deemed inadequate.
    - Saturday and Sunday 29N service frequencies would be improved from 60 minutes to 30 minutes.

The service eliminations under this potential service change would result in an estimated savings of $1,450,000. Based on preliminary analysis, the net costs of the service changes, after accounting for revenue, would approximate these cost savings such that these service changes would be cost neutral.

Again, it is essential to note that no firm decision regarding implementing this potential service change has been made. A final decision will be made after the September 2015 Public Hearing.

The estimated annual change in ridership on the Sunday 10B service due to this potential service change is 20,500 and estimated annual change in ridership on the 29N line is 18,170.

This potential service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.2 Improve 10B Weekday Peak Period Headway (from current 30 minutes to proposed 15 minutes)

The 10B is the key WMATA bus service connecting Alexandria and Arlington, running between Hunting Point in south Alexandria and the Ballston Metrorail station (the 10B route runs predominantly via Washington Street, Mount Vernon Avenue, Walter Reed Drive, and N. Glebe Road). The 10B is scheduled in conjunction with the 10A route, which runs between Hunting Point and the Pentagon. The two routes share a common routing along a portion of their alignment (predominantly along Washington Street and Mount Vernon Avenue) but then each split in order to serve their two distinct termini. Each route runs every 30 minutes in the peak period, thus providing a combined 15 minute headway along the shared portions of the two routes. The disadvantage of this service structure is that the branches of the two routes receive only 30 minute service, including service between Alexandria and Arlington. In evaluating service frequency sufficiency, the WMATA service evaluation framework states that bus service in urban areas should have a maximum headway of 15 minutes during the weekday peak period. Based on the importance of the 10B as the key surface transit connection between Alexandria and Arlington as well as the results of the service frequency evaluation, it has been recommended that the peak period 10B headway be changed from 30 minutes to 15 minutes.

The total estimated annual incremental operating cost associated with this service change is $1,023,212. The estimated annual increase in ridership due to this service change is 39,500. Estimated additional annual revenue associated with this service change is $43,450. The estimated net annual incremental cost of this service is $977,762. The estimated capital cost for this service change is $3,200,000. The

schedule for implementing this service change is indeterminate given the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.3 Implement Weekday Peak Period MetroExtra Service Along the Current 29K Alignment

This recommendation involves implementation of new MetroExtra service along the current 29K alignment. The service would be an overlay on existing service (there would be no changes to existing service) and would run every 15 minutes during weekday peak periods. The estimated change in annual ridership associated with this service change is 30,271. The estimated annual revenue change associated with this service change is $38,444. The estimated total annual operating cost of this service improvement is $2,037,626 and the estimated net annual cost is $1,991,181. The estimated capital cost of this improvement is $3,200,000. The schedule for implementing this service change is indeterminate given the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.4 Improve Sunday Service Frequency on the 28A Line

This recommendation would involve service frequency improvements on the Sunday 28A Line from the current 30 minutes to 20 minutes. The estimated annual ridership change from this service improvement is 12,600. The estimated increase in operating cost associated with this change is $405,720, the estimated change in revenue associated with this service change is $13,860 and the net operating cost accounting for revenue is $391,860. There would be no additional capital cost associated with this service change. The schedule for implementing this proposed service change is indeterminate given the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.5 Sunday Service Restructuring on the 7A and7F Routes

This service recommendation includes the following elements:

- 7F service would be implemented on Sunday, running at a service frequency of 60 minutes. Currently the 7F runs only on weekdays and Saturdays.
- Current Sunday 7A service would be modified to run at a 60 minute service frequency rather than its current 40 minutes.

This service change would provide Sunday service to areas of the 7 Lines service area served only by the 7F and would also improve Sunday service frequencies along the common portion of the 7A, 7F from 40 minutes to 30 minutes.

The estimated annual ridership change from this service improvement is 2,800. The estimated annual increase in operating cost associated with this change is $278,208. The estimated annual change in revenue associated with this service change is $3,080 and the estimated net operating cost after accounting for revenue is $275,128. There would be no additional capital cost associated with this service change. The schedule for implementing this proposed service change is indeterminate given the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.6 Run All 25B Mid-day Service to Van Dorn Metrorail Station

Currently during the weekday mid-day every other 25B trip runs to the Van Dorn Metrorail Station (the other trips terminate at the Landmark Mall). Based on this trip pattern, the 25B mid-day service frequency to the Van Dorn Metrorail station is every 60 minutes. Under this proposed service recommendation, all mid-day 25B trips would run to the Van Dorn Metrorail Station. This service change would result in a 30-minute service frequency to Van Dorn, compared to the current 60 minutes.

The estimated annual ridership change from this service improvement is 6,000. The estimated annual increase in operating cost associated with this change is $224,250. The estimated annual change in revenue associated with this service change is $6,600 and the estimated net operating cost after accounting for revenue is $217,650. There would be no additional capital cost associated with this service change. The schedule for implementing this proposed service change is indeterminate give the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 4.7 Run all 25B Saturday Service to Van Dorn Metrorail

Currently on Saturdays every other 25B trip runs to the Van Dorn Metrorail Station (the other trips terminate at the Landmark Mall). Based on this trip pattern, 25B Saturday service frequency to the Van Dorn Metrorail station is every 60 minutes. Under this proposed service recommendation, all Saturday 25B trips would run to the Van Dorn Metrorail Station. This service change would result in a 30-minute service frequency to Van Dorn, compared to the current 60 minutes.

The estimated annual ridership change from this service improvement is 2,300. The estimated annual increase in operating cost associated with this change is $185,472. The estimated annual change in revenue associated with this service change is $2,530 and the estimated net operating cost after accounting for revenue is $182,942. There would be no additional capital cost associated with this service change. The schedule for implementing this proposed service change is indeterminate give the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

### 4.8 Run all 25B Sunday Service to Van Dorn Metrorail

Currently on Sundays every other 25B trip runs to the Van Dorn Metrorail Station (the other trips terminate at the Landmark Mall). Based on this trip pattern, 25B Sunday service frequency to the Van Dorn Metrorail station is every 60 minutes. Under this proposed service recommendation, all Sunday 25B trips would run to the Van Dorn Metrorail Station. This service change would result in a 30-minute service frequency to Van Dorn, compared to the current 60 minutes.

The estimated annual ridership change from this service improvement is 1,800. The estimated annual increase in operating cost associated with this change is $185,472. The estimated annual change in revenue associated with this service change is $1,980 and the estimated net operating cost after accounting for revenue is $183,492. There would be no additional capital cost associated with this service change. The schedule for implementing this proposed service change is indeterminate given the current lack of financing available to support implementation.

This proposed service change is not included in the State's Six Year Improvement Program (SYIP), the Washington Region's Transportation Improvement Program (TIP) or the regional Constrained Long Range Plan (CLRP).

## 5.0 West End Transitway Operations

The City of Alexandria is currently conducting an Alternatives Analysis (AA) and Environmental Assessment (EA) for the West End Transitway. A majority of the required capital funds have been identified in the City's Capital Improvement Program for the design and construction of this facility. The City plans to apply for a Federal Transit Administration (FTA) Small Starts grant to complete the funding package. Funding for operations will likely be funded through the City's Transportation Improvement Program (TIP). The final proposed operating plan for the service is being developed as part of the planning phase currently underway but has not yet been finalized and therefore operating costs and revenue cannot yet be estimated. This operating plan is also necessary for calculating the capital costs associated with the vehicle fleet used to operate the service. The estimated start of operations for the West-End Transitway is 2020.

The West End Transitway is included in the State's Six Year Improvement Program (SYIP) and the regional Constrained Long Range Plan (CLRP). It is not included in the Washington Region's Transportation Improvement Program (TIP).

## 6.0 Chapter 3 - Service Evaluation Related Improvements

The recommendations contained in Sections 2 and 3 of this chapter address many of the service needs identified in the service evaluation contained in Chapter 3. Further, the analysis of potential unmet transit needs in Chapter 3 indicated that the large majority of heavy trip flows to and from Alexandria are generally being met with existing transit service, either through direct service or through a transit trip that requires a single transfer. Implementation of the West End Transitway will also result in a significant increase in transit travel choices and convenience for current riders and potential new riders in some of the most heavily populated portions of Alexandria.

One heavy trip flow that is not well served by transit is from the southwest corner of the City and the Beauregard corridor to Tysons Corner. The 28A and 28X services along Leesburg Pike provide strong connections from the King Street Corridor and the NVCC/Mark Center area of the City to Tysons but not

from the heavily populated Beauregard corridor and the southwest corner of the City. One possible method of improving the connection between these areas of the City and Tysons is through an extension of 28X service farther south to these underserved areas of the City. Another alternative is to route select 28A trips to this part of the City in order to strengthen the connection with Tysons.

## 7.0 DOT Paratransit Service

Feedback received from City of Alexandria staff responsible for managing DOT paratransit service indicated that DOT ridership and demand is generally constant from year to year and that there is not any indication that there is unmet demand for the service. Based on trend data from many years, there is no anticipated need for expanded DOT service.

## 8.0 Transit Supportive Land Use Activities

The effective integration of transit and land use is an overriding focus of transportation and land use planning within the City of Alexandria. The City is a densely developed urban area and a number of redevelopments throughout the City that will result in increased density are being planned specifically with transit in mind (see Chapter 3 for a more detailed description of the most significant redevelopment areas). Two key examples of this integrated planning are the Potomac Yard development and the Beauregard Corridor.

The Potomac Yard development will ultimately be served by three levels of transit. The first two, local Alexandria Transit DASH routes, and the Metroway BRT service, are already in place. Local transit provides connections between the Potomac Yard area and other parts of Alexandria while the Metroway provides connections to Metrorail stations as well as job centers in the Arlington portion of Potomac Yard as well as Crystal City. The third element of transit within Potomac Yard is the planned Potomac Yard Metrorail Station, which is currently in the planning phase.

The second key example is the Beauregard corridor, which is located in the west end of the City. The Beauregard corridor will be served the West End Transitway and the Transitway will be a key foundation in the redevelopment of the corridor, which will include increased densities as well as concentrations of density to allow for increased green space within the corridor. Transit and land use planning in this corridor have been integrated from the very beginning of the Transitway planning process.