City of Alexandria

Comprehensive Transportation Master Plan

March 21, 2008

▶ TRANSPORTATION CHOICE

▶ CONNECTIVITY & MOBILITY

▶ QUALITY OF LIFE

City of Alexandria
Comprehensive Transportation Master Plan

Overview

THERE IS AN INTEGRATED, MULTIMODAL TRANSPORTATION SYSTEM THAT EFFICIENTLY AND EFFECTIVELY GETS PEOPLE FROM POINT "A" TO POINT "B". -*City Strategic Plan 2004-2015*

Vision

Envision walking out of your front door and down a streetscaped sidewalk, safely crossing the street at a well marked, signalized intersection that made you feel like you, the pedestrian, had priority. Then, after safely crossing the street, you arrive at the transit stop, but this is no ordinary transit stop. This is a Smart Stop that provides attractive shelter from the morning sun. You check the information kiosk for the arrival time of your transit vehicle. Realizing that you have two minutes until the vehicle arrives, you decide to arrange for dinner reservations via a web enabled service offered at this stop. Then, you check to see what transit vehicle you should plan on boarding for the trip to Old Town later that evening for dinner. When you are done making plans for the evening, your vehicle arrives, right on time.

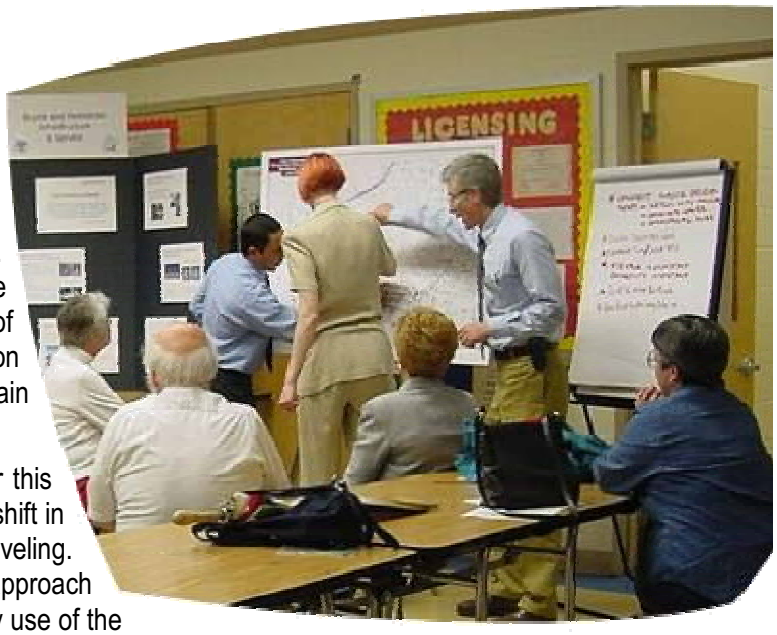
You board the transit vehicle, settle into a comfortable seat, and check on your estimated arrival time on the variable message board at the front of the vehicle. You take out your PDA and organize your day as the vehicle departs and quickly leaves the congested automobile traffic behind as it travels along its own dedicated lane. You watch the bicyclists commuting safely along the bicycle lanes dedicated along this corridor and pedestrians sipping their morning coffee on the landscaped walkway, and before you know it, you are at your destination — sooner than if you had decided to drive yourself.

This is the City of Alexandria's transportation future. With the update of the City's Transportation Master Plan the City seeks to initiate an unprecedented paradigm shift, putting Alexandrians first, and providing them with innovative options for transportation. The successful implementation of this Plan will allow all Alexandrians the opportunity to choose, on a daily basis, if they want to walk, bike or take transit to their destination. The goal of this concept oriented Master Plan is to successfully integrate and link these three transportation modes together, providing connectivity and accessibility to all of Alexandria's recreational, cultural, and economic assets, as well as the assets of the greater Northern Virginia region.

Transportation Vision

The City of Alexandria envisions a transportation system that encourages the use of alternative modes of transportation, reducing dependence on the private automobile. This system will lead to the establishment of transit-oriented, pedestrian friendly village centers, focused on neighborhood preservation and increased community cohesion, forming a more urban, vibrant and sustainable Alexandria. The City will promote a balance between travel efficiency and quality of life, providing Alexandrians with transportation choice, continued economic growth and a healthy environment.

Guiding Principles



In response to citizen input, the City has established the guiding transportation principles which, collectively, form a new template for transportation decision making within the City of Alexandria, and aim to establish the City of Alexandria as a regional leader in the development of innovative transportation solutions. Citizens are seeking a wholesale change in the way the City addresses transportation issues in the form of sustainable alternatives that promote transportation choice; enhance connectivity and mobility; and maintain the City's high quality of life.

The seven guiding principles provide the framework for this transportation plan, and seek to encourage a paradigm shift in the way Alexandrians think and act when it comes to traveling. This shift in thinking aims to overcome the traditional approach that the City has taken in the past, assuming the primary use of the automobile in the design and operation of its infrastructure. In the 21st Century, Alexandria must embrace all methods of overcoming automobile dependency. Regional projections show that population and job growth are expected to continue to increase within the City and region, placing further pressure on transportation infrastructure that is currently over stressed. The essential character of Alexandria's land use, the future quality of life for City residents, and the accessibility of all City assets is dependent upon how the City manages its transportation system. This Plan establishes the goals, strategies, actions and policies that will guide these critical management decisions.

The adoption of this Transportation Plan is a very exciting time in the City of Alexandria. Feedback received from citizens and stakeholders throughout the Plan development process indicates that Alexandrians are not willing to accept the status quo. The new paradigm rejects the notion that traffic congestion be considered a necessary evil that goes along with living in close proximity to the Nation's Capital. The problem of congestion not only impacts the required time for daily commutes, it has a negative impact on the quality of life of all Alexandrians—resulting in increased travel times for necessary trips to the grocery store, library, restaurant and post office. Congestion limits the activities of individuals with mobility impediments and those without access to automobiles; it discourages walking and physical activity; it contributes to poor air quality; and it also impacts the City's economic base, deterring tourists from visiting the City during certain times of the day and year, and deterring the establishment of new businesses. With the adoption of this plan, the City of Alexandria recognizes the concerns of its citizens and the inconveniences that congestion has caused, and strives to return the City streets to the citizens of Alexandria.

Guiding Transportation Principles

1. *Alexandria will develop innovative local and regional transit options.*
2. *Alexandria will provide quality pedestrian and bicycle accommodations.*
3. *Alexandria will provide all its citizens, regardless of age or ability, with accessibility and mobility.*
4. *Alexandria will increase the use of communications technology in transportation systems.*
5. *Alexandria will further transportation policies that enhance quality of life, support livable, urban land use and encourage neighborhood preservation, in accordance with the City Council Strategic Plan.*
6. *Alexandria will lead the region in promoting environmentally friendly transportation policies.*
7. *Alexandria will ensure accessible, reliable and safe transportation for older and disabled citizens.*

What Does This Plan Contain?

This Plan was developed by the members of the Ad Hoc Transportation Task Force and the City of Alexandria to ensure the wise, effective, and sustainable planning of the City's transportation future. The Transportation Master Plan is a concept oriented Plan that was developed to identify innovative approaches to addressing the direction of Alexandria's transportation future. This Plan establishes a multimodal vision that will guide the City forward in it's transportation decision-making process.

The Transportation Master Plan includes six sections and an extensive appendix.

Section One

Studies show that a reduction in the intensity of the peak hour traffic congestion within the City is not a realistic long-term aspiration. As congestion increases, alternative transit services that provide seamless travel, time savings for commuters, real-time travel information, desirable passenger amenities, and an enjoyable travel experience will become more desirable.

This ***City of Alexandria Transit Concept*** outlines a progressive vision for the future of travel throughout the City of Alexandria with a system of innovative transit vehicles operating along three primary transit corridors within secure rights-of-way dedicated exclusively to transit use. This plan is an innovative vision for the development of clean, efficient, enjoyable transit services that travel in dedicated lanes, enhancing mobility throughout the City and region for commuters, residents and visitors alike.

Section Two

The most important elements of walkability are easily defined but often elusive. Well-connected streets with pleasant sidewalks or paths, attractive landscaping and easy-to-cross intersections are vital to a successful pedestrian network. The character of traffic is also of vital importance: If our streets are too wide or is traffic is too heavy or fast, people will not walk.

The ***Pedestrian Section*** of the Transportation Plan calls for a city where public spaces, including streets and off-street paths offer a level of convenience, safety and attractiveness that encourages and rewards the choice to walk regardless of age or ability. This section outlines supportive policies and targeted infrastructure investments that will place the City as a leader in the region of creating pedestrian friendly streets.

Section Three

A community that is bicycle-friendly is one that pays extra attention to its quality of life. The ***Bicycle Section*** of the Transportation Plan seeks to help Alexandria become a genuine bicycle-friendly community by expanding the city's on- and off-street bikeway network by outlining supportive policies and targeted infrastructure investments.

It is a blueprint for creating a safe and convenient bicycle network that will increase the number of Alexandrians who bicycle for all trips shorter than five miles. With "complete streets" designed to enable safe travel by all users and routine accommodations for bicyclists, the City can make bicycling a viable transportation option in Alexandria.

What Does This Plan Contain?

Section Four

The streets of Alexandria represent the largest public resource within the City. Predominately urban in nature, the City of Alexandria must capitalize on its history as a walkable urban environment, and must ensure that future plans and development serve all modes of travel in a safe, efficient and context sensitive manner. City streets serve many functions providing citizens of all ages and degrees of mobility the ability to walk down the sidewalk to grab a cup of coffee, speak with their neighbors, walk their children to school, or bicycle to work.

The ***Streets Section*** outlines approaches and techniques that will ensure streets are designed to safely accommodate all modes of travel, while preserving community character.

Section Five

Parking is an essential component of the City of Alexandria's transportation system. The City's parking resources consist of private and public parking garages, lots, and curbside parking. All of these resources must be managed effectively in order to provide residents and visitors with needed parking.

This ***Parking Section*** of the Transportation Master Plan provides a background of the City of Alexandria's existing parking policies, identifies the guiding principles for the City in the management of parking, and identifies specific actions and strategies for the City to undertake in order to manage parking resources in a cost effective manner that contributes toward the overall vision of the City.

Section Six

This section explores decisions that impact the ultimate Transit Concept, bicycle, pedestrian, street and parking cost. The section also identifies potential funding mechanisms and implementation approaches that will assist in aiding the City see its transportation vision become a reality. Where applicable, other Master Plan elements that can be funded by similar sources and coordinated in unison with delivery of the Transit Concept project will be incorporated in the presentation of funding options.

The ***Funding & Implementation Section*** of the Transportation Plan provides a listing of federal state and local funding resources that the City may utilize to fund the identified actions, strategies and plan concepts. The process and policies for identifying project funding priority and implementation are also identified in this section.

- PRIORITY TRANSIT CORRIDORS

- PASSENGER AMENITIES

- NEIGHBORHOOD CIRCULATORS

Transit

THE CITY WILL EXPAND LOCAL AND REGIONAL TRANSPORTATION OPTIONS TO REDUCE TRAFFIC CONGESTION AND DECREASE PUBLIC DEPENDENCE ON THE AUTOMOBILE.

Introduction

Source: http://www.amherstrail.org/memberpages/MinneapolisLightRail.html, Photo—Joe Kurland, Minneapolis Light Rail, November 2004

This Transit Element outlines a progressive vision for the future of travel throughout the City of Alexandria with the development of the City of Alexandria Transit Concept Plan. Studies show that a reduction in the intensity of the peak hour traffic congestion within the City is not a realistic long-term aspiration. As congestion increases, alternative transit services that provide seamless travel, time savings for commuters, real-time travel information, desirable passenger amenities, and an enjoyable travel experience will become more desirable.

In response to this reality, the City envisions a system of innovative transit vehicles operating along three primary transit corridors within secure rights-of-way dedicated exclusively to transit use. These corridors will provide access to the City's major population and activity centers, and connectivity to local and regional destinations. The state-of-the-art vehicles will provide for a clean, quiet, enjoyable commuting experience, resulting in minimal impact on existing neighborhoods, traffic routes and the environment. The City's new transit system will be linked through circulator shuttles as well as intermediate transit services offered via DASH that complete the transit network, providing access to all residents who are not located in direct proximity of the newly designated transit corridors.

The entire transit network will be linked by way of Smart Stops, Shelters and Stations located along all transit routes. These smart facilities will provide varying levels of passenger amenities such as wireless access, coffee, ticket machines and information kiosks. All of these facilities will provide real-time transit information, bicycle parking, shelter and seating for transit users. The Smart Stops, Shelters and Stations will provide a natural transition from the pedestrian environment to the transit environment, making mass transit attractive, enjoyable and efficient alternative to the private automobile.

City of Alexandria ***Transit Concept Plan***	***Goal:*** Ensure that people can travel into, within and out of the City of Alexandria by providing a mass transit system that combines different modes of travel into a seamless, comprehensive and coordinated effort. ***Objective:*** A reliable and convenient mass transit system integrated with surrounding land uses and existing transportation connections that offers travel time savings and an enjoyable transit experience for its riders, featuring advanced technology and passenger amenities.

Issue: *Transit is not viewed as a comparable alternative to the private automobile.*

Metrobus, Metrorail, Virginia Railway Express (VRE) and DASH lack the flexibility, efficiency and convenience of the automobile. Transit usage is often a result of necessity versus choice and is generally perceived unfavorably, particularly concerning reliability and safety. Insufficient service hours, geographic coverage, capacity and frequency of service have all been identified as problems. Lack of real-time information, long headways, difficulty of transfers and lack of connections to preferred destinations discourage existing and potential riders.

Solution: *Secure dedicated, congestion-free, transit rights-of-way for future transit services using advanced technologies.*

The main emphasis of the Transit Concept Plan is to secure dedicated, congestion-free, transit rights-of-way for future transit services. The expansion of transit and dedicated lanes will provide the residents of Alexandria an alternative mode of travel that is fast, efficient, comfortable and reliable. Existing local bus service in general, is characterized by frequent stops routed along, or traveling on congested roads, thus offering limited incentives to riders in terms of travel time, comfort and convenience. This Plan's success will hinge upon the ability to provide superior transit service levels that:

http://www.lightrail.com/photos/minneapolis/minneapolis57.jpg

- are competitive with the private automobile;
- coordinate feeder services and enhancements to the existing local transit services offered by DASH; and
- connect with existing local and regional services including WMATA Metrorail, commuter rail, other rail-based transit services, major highway portals.

This transit concept must be fully integrated with existing regional services and coordinated with proposed future services in order to truly serve Alexandrians. The City will work diligently to foster regional cooperation and coordination with the future transit plans of Arlington, Fairfax and other regional entities to ensure that new services are coordinated, and provide the most efficient means of operation.

What's Different about this Plan for Transit?

- Focus on securing dedicated, congestion-free transit right-of-way
- Use of state-of-the-art clean, environmentally friendly , comfortable, accessible, vehicles (Light Rail, Street Car, Bus Rapid Transit) that provide amenities to make the daily commute an enjoyable experience
- Use of smart technology to provide transit users and riders with up to the minute information
- Shorter headways, making it easier for riders to catch a ride when and where they need to
- Focus on enhanced connectivity between various modes of transit, bicycle and pedestrian facilities

Transit Concept Plan

The Ad Hoc Transportation Task Force, in collaboration with City officials, worked on the analysis of City trends in transit ridership, socioeconomic conditions, travel demand forecasts for automobile and transit travel, and regional plans. The result of this in-depth analysis is the designation of three primary transit corridors: Corridor A in the vicinity of Route 1, Corridor B in the general vicinity of Van Dorn/Shirlington, and Corridor C in proximity to Duke Street.

In addition to the above mentioned analysis, the designation of the proposed transit corridors was developed with consideration of the following important goal and objective and input from

Goal: Ensure that people can travel into, within and out of the City of Alexandria by providing transportation choices that combine different modes of travel into a seamless, comprehensive and coordinated transportation system.

Objective: A reliable and convenient mass transit system integrated with surrounding land uses and existing transportation connections that offers travel time savings and an enjoyable transit experience for its riders, featuring advanced technology and passenger amenities.

In addition to the three transit corridors being proposed for future transit investments, other potential alignments are also proposed on the Transit Plan Concept Map. Specific alternatives depicted include potential service along Eisenhower Avenue and Quaker Lane. In many cases, these and other potential alignments represent options for future extension. These additional alternatives will only be pursued when travel demand and corridor development dictate.

The corridor outlines presented in the following map have been developed only at a conceptual level, with the purpose of identifying initial issues and concerns. Upon public review and stakeholder input, one or more corridors may be identified as a priority to move forward in the project development process. At that time, the specific corridor concept would be subject to a formal feasibility study which would encompass more focused alignment, conceptual design of guideway/station improvements, and initial service planning scenarios. Order-of-magnitude capital costs would be estimated.

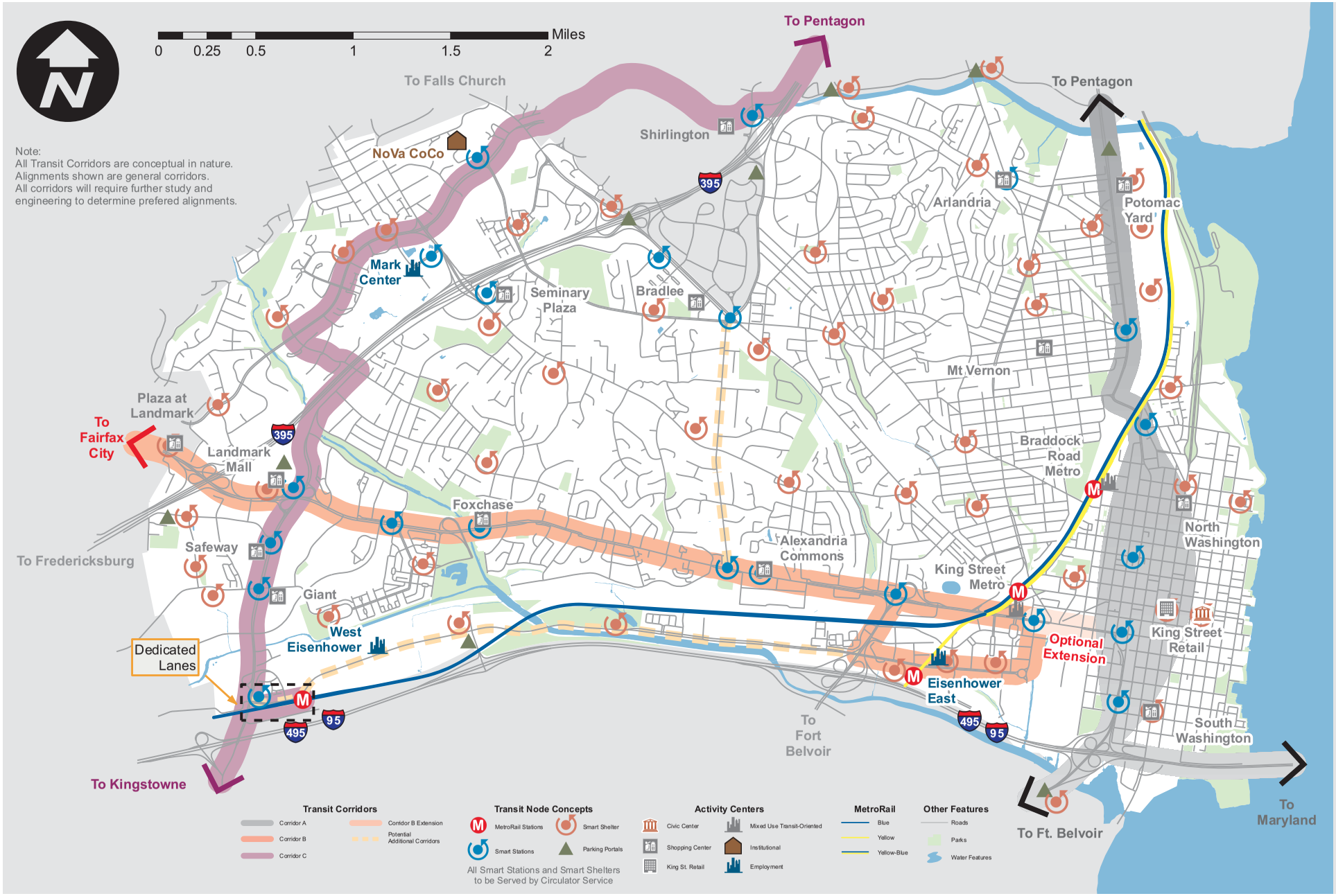
What Do Alexandrians Say?

Desired Public Transit Improvements

- More peak hour buses and bus-only lanes
- Smaller buses
- Increase shelter lighting and safety
- Improve pedestrian walkways and access to public facilities
- Provide automated schedule
- Better maintenance, recognizable, visible transit signage
- More and clearer bus schedules
- Integrate transit with city planning/development

Community Meeting—July 9 & 10, 2003

City of Alexandria Transit Concept



Transit Concept Characteristics

► ***Provides for a Seamless Transit Feeder Network***
Transit improvements will be developed along routes that parallel existing roads and areas of high travel demand. Current DASH service will be integrated with new transit elements to provide high frequency feeder and circulator service. The feeder bus network will circulate in lower density communities, connect to developments beyond walking distance of the corridor transit system, and provide timed transfers at smart stations along the main route.

► ***Focuses Investments on Mobility Needs***
Three corridors have been proposed as identified in the following pages, each of which can be developed independently as funds and development dictate, as part of a larger, more flexible system.

This Transit Concept will provide guidelines for the identified corridors, specifically addressing the following:

- Location and type of dedicated right-of-way and transit priority features (vehicle type will be determined during the feasibility study stage)
- Local transit access to and internal circulation at Metrorail Stations
- Traffic flow in congested areas
- Coordinated parking, pedestrian and bicycle improvements

► ***Integrates Key Elements with Transit Plans in Surrounding Jurisdictions***
This Transit Concept proposes essential regional connections with destinations beyond the City of Alexandria for each corridor including connections to Fort Belvoir, Fairfax City, the Pentagon, and potentially to Maryland via the Woodrow Wilson Bridge.

Key external planning efforts that will be incorporated into the detailed design of service in these corridors include:

- Capital Beltway Corridor Study[1]
- Transaction 2030[2]
- Crystal City/Potomac Yard Transit Alternatives Analysis[3]

► ***Advocates Policy to Encourage Future Transit Supportive Land-Use***
This Transit Concept proposes coordination with City planning efforts to adequately review and comment on all new land use/development adjacent to the designated corridors. Review will consist of:

- Identification of rights-of-way to be dedicated as part of future development planning or approvals
- Encouragement and coordination of an appropriate mixture and density of activity around transit stations
- Addition of design requirements to create a comfortable walking environment for pedestrians and good connections for bicyclists.

Dedicated Right-of-Way

The Transit Concept is focused on having the running surface for the transit vehicles, alternatively called a right-of-way or alignment, within existing lanes of traffic. The lanes would be dedicated, for the use of transit vehicles only, thus improving schedule reliability and travel time. This approach minimizes the need to expand the width of roads within the corridor, thereby minimizing the construction costs as well as impacts on surrounding development.

Transit Concept Characteristics

Transit Vehicles

While this transit concept does not identify the specific vehicle type that will be utilized in the City of Alexandria, it does recognize that there are a variety of vehicle types, options and related costs. The graphic below provides a brief primer on vehicle types and characteristics.

Lower: Cost, Performance, Effectiveness

Strip Retail

Parking Dominance

Unconnected Parcels

Hostile pedestrian amenities

SHUTTLE BUS

Characteristics:

Local circulators that connect to major routes/transit centers.

Corridor Applicability:

Central Business District and lower density communities with mixed-land uses.

Bus Lane

Restricted access to existing lane or newly constructed lane

Impact to on-street parking

Clusters

At 7 dwelling units/acre transit usage increases sharply

BUS/EXPRESS BUS

Characteristics:

Expanded bus service with improved frequency and added bus routes and enhanced quality of service.

Corridor Applicability:

Enhanced bus potential on all corridors. Express bus suited for arterials where bus priority can be given.

Signal Priority

Accelerates bus service in congested corridors

Main Street

Variety of uses combined with pedestrian activity

Frequent/Enhanced transit supported

STREET CAR

Characteristics (Modern):

Articulated multiple unit cars operating on city streets, at-grade, elevated, or subway alignments.

Corridor Applicability:

Applicable in high demand, heavily urbanized corridors. Heritage trolleys present potential for tourism market in appropriate context.

Bus Zones

Restrictions on auto movements on streets enable more schedule reliability

Need alternative routes for displaced traffic

Town Center

Supportive of intermodal transit options (hubs)

If mixed-use, can capture walk-up trips

BUS RAPID TRANSIT

Characteristics:

Street bus or articulated bus operating on exclusive guideway or lane, at grade or elevated.

Corridor Applicability:

Applicable in high demand corridors where LRT is not yet feasible. Best for line-haul applications, with feeder bus and park-and-ride where necessary.

Congestion Pricing

Peak hour charges to reduce congestion; incentive for transit

High Density

At 60 dwelling units/acre transit mode share can increase to 50%

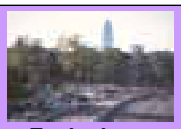
LIGHT RAIL TRANSIT

Characteristics:

Articulated multiple unit cars operating on city streets, at-grade, elevated or subway alignments.

Corridor Applicability:

Applicable in high demand, heavily urbanized corridors. Strong transit-oriented development potential.



Exclusive Right-of-Way

Separate (but costly) facility to maintain service reliability regardless of congestion level

Higher: Cost, Performance, Effectiveness

Corridor A

Providing reliable transit service on dedicated transitways where possible through Corridor A will provide a much needed resource for through commuters. This is needed to accommodate commuters who currently choose automobile travel over transit due to the lack of incentive and benefit to use transit. This corridor will also provide an alternative to Metro for tourists to access the Old Town area.

Corridor A is a primary link between the Pentagon to the north and Ft. Belvoir to the south. The focus of Corridor A is on accommodating through trips and providing connectivity between City neighborhoods. Corridor A also provides a critical route for Alexandrians who commute to the Pentagon and Crystal City on a daily basis. The transit corridor will enter the northern City limit through Arlington – coordinating and integrating service with the City of Arlington to provide a seamless connection to the Pentagon and the North. Traveling south on Corridor A will provide access to the Potomac Yard Development, Mount Vernon Avenue retail area, Old Town and the South Washington area of the City. To the south, Corridor A will coordinate and integrate with service provided by Fairfax County to Fort Belvoir. In addition, a transit connection to Maryland, via the Woodrow Wilson Bridge, is possible.

Length: 4 Miles

Demographics 2000 / 2030
(1/4 mi buffer):

Population:	15,850 / 21,157
Pop. Density (sq. mi.):	7,304 / 9,705
Employment:	18,405 / 30,479
Emp. Density (sq mi):	8,443 / 13,980

Major Activity Centers
Potomac Yard
King Street Corridor

Strength
High through trip demand with no transit alternatives.

Opportunities
Coordination with services provided by adjacent jurisdictions including connections to Crystal City, Fairfax, Fort Belvoir and the Pentagon.

Corridor B

Corridor B will connect parts of the city with various land uses. This corridor also provides a critical link between Alexandria and Fairfax County to the west. The Corridor B transit alignment would also feature a loop to better enhance connectivity to the Eisenhower East area.

Corridor B crosses the western City limit from Fairfax County, coordinating and integrating service with the County to provide a seamless connection to Fairfax City to the West. Traveling east, the corridor will provide access to the Landmark Mall area, Foxchase, Alexandria Commons and the King Street Metrorail station. At its eastern terminus, Corridor B will follow a loop around the East Eisenhower area comprised of Holland Lane, Eisenhower Avenue and Telegraph Road

In addition, this corridor will provide for the option of an extension of Corridor B between Holland Avenue and Route 1, providing a direct connection to transit services along the Route 1 corridor.

Length: 6.25 miles

Demographics (1/4 mi buffer): 2000 / 2030

Population:	26,722 / 35,587
Pop. Density (sq. mi.):	8,430 / 11,226
Employment:	24,843 / 50,209
Emp. Density (sq mi):	7,837 / 15,839

Major Activity Centers

King Street & Eisenhower Metrorail Station
East Eisenhower Development
Landmark Mall

Strength

Important corridor with proven existing transit ridership base.

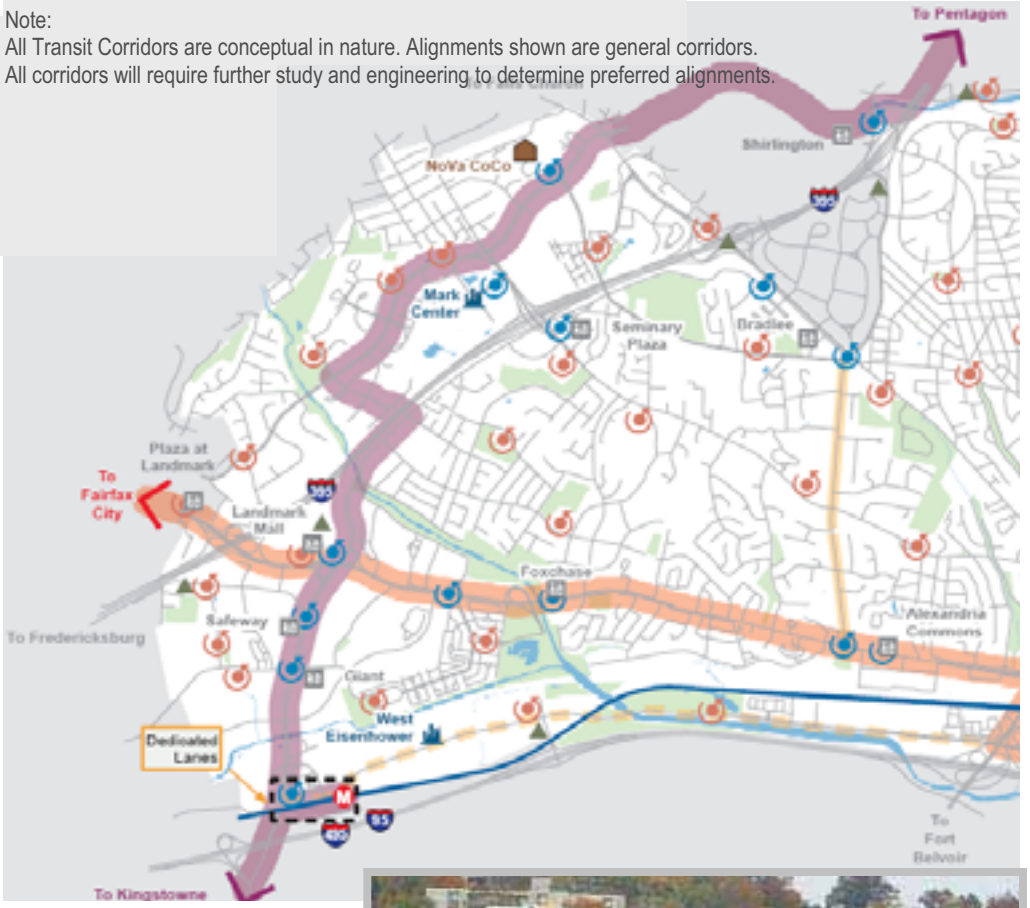
Opportunities

Redevelopment and infill of the Landmark Mall area provides opportunities for a range of transit amenities and could serve as a hub for regional and local transit services.

Corridor C

Corridor C provides a key link between Kingstowne and points south with the Pentagon. The corridor would serve both to capture through traffic as well as provide vital connectivity to key destinations.

Corridor C will begin at the northern City limit with Arlington along Beauregard Street, coordinating and integrating service with the City of Arlington to provide a seamless connection to the Pentagon to the North. Traveling South the corridor will provide access to the Mark Center, Landmark Mall area, and Eisenhower area of the City. At its southern terminus, Corridor C will coordinate and integrate with service provided by Fairfax County to Kingstowne and points south. In addition, this corridor will provide for a direct connection to the Van Dorn Street Metrorail station via dedicated lanes.



Length: 6.25 miles

Demographics (1/4 mi buffer): 2000 / 2030

Population:	36,261 / 40,438
Pop. Density (sq. mi.):	11,332 / 12,637
Employment:	18,842 / 27,216
Emp. Density (sq mi):	5,888 / 8,505

Major Activity Centers

Van Dorn Street Metrorail Station
Landmark Mall
Mark Center
Northern Virginia Community College

Strength

Serves area of high employment growth

Opportunities

Improved connection with Van Dorn Metrorail Station from points north.

Passenger Amenities

A variety of amenities can be provided at transit Smart Stops, Shelters and Station locations to enhance the attractiveness of public transportation, to brand the system and to provide passenger information and amenities. The treatment of transit stations and stops is a key component of this Transit Concept as a means to promote the visibility of a new, high-tech transit system.

The potential design features of these facilities that set them apart from traditional bus shelters would be:

- Extensive use of wireless technology for personal passenger information
- Ticket machines / information kiosks
- Real-time travel information (at stop and available on-line)
- Cell phone text messaging for next bus departure
- The use of environmental design and operation (solar power)
- Efficient layout of weather protected interior spaces, with inclusion of off-vehicle fare collection technology.
- Designs that permit efficient, orderly and rapid flow of alighting and boarding passengers from the stop to the vehicle
- Bicycle and pedestrian amenities including bicycle racks, lockers and benches.
- Vendors for coffee, newspaper, magazines, etc.

Smart Stations and Shelters

Smart Stations, Shelters and Stops will transform the way Alexandrians perceive and utilize transit by providing users with weather protected access to traveler information systems and electronic payment systems, resulting in enhanced safety, scheduling and improved quality of service. These facilities will be fully accessible by pedestrians and bicyclists, provide adequate lighting for safety and varying levels of amenities depending on demand and location. Services and amenities provided at these facilities may include bicycle racks, lockers, coffee service, newspaper stands and internet access.

Traveler Information Systems

Include wireless communication and technologies to provide information to travelers at home, at work, on the roadside, at transit stations, or on transit vehicles. Travelers can access real-time schedules and traffic information via cell phone, television, computer, PDA, variable message signs, or information kiosks. Electronic notification of transit information, routes and schedules can also be provided at stations and on vehicles.

Electronic Payment Systems

These systems may utilize magnetic swipe cards or smart cards to provide convenient fare payment for travelers and reduce costs for revenue collection by transit providers. Smart cards can be standardized to provide a single form of fare access to multiple transit providers.

Neighborhood Circulators

In high traffic volume areas of Alexandria, numerous private operators provide shuttle service from major developments to nearby destinations and Metrorail Stations. These are often initiated as the result of Transportation Management Plans, which are developed to identify and finance the transportation strategies to induce people to use public transportation. Often these services travel only from point-to-point and are not coordinated.

The Transit Concept proposes a consolidation of these services into circulator routes with integrated stops and schedules providing connectivity between neighborhoods and the dedicated transit corridor services. This consolidation would focus on providing reliable service into lower-density neighborhoods and shopping areas. This will result in an increase of citywide transit mobility options, while at the same time, ensuring that existing routes and services funded through previous TMPs are maintained.

Circulator routes are designed to collect, distribute, and feed riders into the larger transit network, offering services that penetrate into neighborhoods, provide localized trips and operate on secondary roadways. Circulator routes are generally confined to a single community, with intercommunity trips offered via transfers to other bus or rail services. The routes are generally short, and smaller vehicles reflect more frequent and smaller passenger loads as well as the need to operate on smaller streets, or more confined spaces.

Circulators may focus around a certain development or Metrorail Station and can be implemented in stages along the corridor. In fact, a circulator network could begin to be implemented prior to initiation of the transit improvements within the corridor, provided they are coordinated with the schedules and routes of other transit providers. Operation of these circulators could be provided via contract or operated by DASH. In general, the characteristics identified below define successful circulator systems and are recommended to be considered during the public input and planning stages that will refine this concept and its circulator routes.

Characteristics of Successful Circulator Systems[3]

- Coordinated Intermodal Connections
- Population and Population Density
- Established Ridership Demand
- Mixed-Use Setting or Special Conditions
- Appropriate Headway and Travel Times
- Low Operating Cost
- Attractive Pricing
- Accessible to older adults and disabled citizens

Funding

Various components of the Transit Concept could potentially have different project delivery approaches. Typically the system (right-of-way, vehicles) is better suited for traditional financing while development of station areas has significant potential to attract private interest and funding. The funding mechanisms available to project sponsors and local partners are outlined in the following sections.

Federal Funding Options

Federal transportation funding legislation known as SAFETEA-LU, authorizes $286 billion in spending for the six-year period 2004-09 and incorporates federal programs for transit projects. This includes the discretionary Section 5309 New Starts program, administered by the Federal Transit Administration (FTA), which is the primary capital funding source for major fixed-guideway transit investments. Eligible projects include BRT, busways, and rail systems. As previously indicated, this program on average finances 50% of the capital costs. Significant scrutiny is placed upon the technical requirements, evaluations, and funding recommendations associated with the project. While meeting these conditions is better geared for mega projects, such as the Dulles Corridor Metrorail, a new "Small Starts" program is envisioned for smaller-scale circulator systems.

The entire Alexandria Transit Concept, implemented as BRT, or one specific streetcar or LRT corridor could qualify under this program. On a corridor-by-corridor basis, alternatives and their components can be packaged uniquely to reach the $250 million threshold. Small Starts funding has several requirements, which would need to be incorporated into the design of BRT facilities, vehicles, and the service plan. The requirements that correspond with the Small Starts program include:

- Substantial Transit Stations
- Signal Priority/Pre-emption (for Bus/LRT)
- Low Floor/Level Boarding Vehicles
- Special Branding of Service
- Frequent Service - 10 min peak/15 min off peak
- Service offered at least 14 hours per day

The Small Starts funding application will compete with other projects nationwide. Favorable evaluation depends on key considerations, such as overall cost effectiveness, inclusion of transit supportive land-use plans and policies, and a demonstrated local financial commitment. The financial commitment must indicate a reasonable plan to secure funding for the local share of capital costs or sufficient available funds for the local (non Federal) share and demonstrate the agency sponsoring the project is in good financial condition. The Small Starts program follows a consolidated Alternatives Analysis Development process as prescribed by the FTA. In this case, other potential solutions It is important to also note, that in order to secure these Federal funds and comply with regulations, the project sponsor must work with the Metropolitan Washington Council of Governments (MWCOG) to ensure the project is included in the region's long-term planning documents.

The Small Starts program is new, and currently no appropriations have been made. Draft rules, following up on interim guidance are anticipated in spring 2007, with final implementation expected in 2008. The FTA is actively soliciting viable Small Starts project proposals to advance the new program, while rulemaking is underway.

Other Federal Programs

There are also various other federal funding mechanisms available through SAFETEA-LU. Typically, the programs identified here do not represent a primary source of project capital funding, yet rather support components of the overall project, such as vehicle purchase or station area development. Other programs are available to transit providers by formula, based upon population served and the amount of service provided. Finally, Some programs represent credit assistance, rather than grant funds, which are often useful to deliver a project more rapidly and at lower cost.

Funding

Other Federal Programs that may be applicable to the Transit Concept include:

STP/CMAQ - Flexible Highway/Transit funding which may be used for a variety of transit improvements.

Formula Funds - Section 5307 represents the primary funding that is a formula grant program for urbanized areas, providing capital, operating, and planning assistance for mass transportation.

State infrastructure banks (SIBs) - These state or multi-state funds operate in the same manner as private banks and provide flexible transportation funding in the form of loans, lines of credit and other credit enhancements to allow states to accelerate the completion of transportation projects.

Transportation Infrastructure Finance and Innovation Act (TIFIA) - Credit assistance available to support no more than 33 percent of the eligible project costs of projects that are budgeted at $100 million or more. Dedicated revenue streams (e.g., tolls for highway projects) must support eligible projects.

Grant Anticipation Revenue Vehicles (GARVEEs) - Mechanism to accelerate future federal revenues to fund transportation projects.

State Funding Options

While Federal funds typically represent a primary funding source for large, capital intensive transit projects, there are other state, local, and private funding options available either in lieu of Federal funds or to provide the local match requirement for receipt of Federal funds. In Northern Virginia, state funding is primarily directed through recommended projects from the Northern Virginia Transportation Authority (NVTA). Funding sources are generally Northern Virginia's own allocation of primary highway system funds with some state transit assistance. Funding levels have been minimal, but have been directed to such projects as the Columbia Pike bus service and Loudoun County commuter bus service. Currently, the metropolitan Washington regional constrained long range plan produced by the Transportation Planning Board (TPB), which applies only revenue sources reasonably expected to be available, has not included sufficient funds for known capital needs in the area. Current reform initiatives, such as the Office of Intermodal Planning and the Transportation Accountability Commission are tasked with addressing these funding shortfalls.

Virginia Department of Rail and Public Transportation - Including programs that oversee Transportation Efficiency Improvement Funds, Mass Transit Capital Assistance and Technical/Demonstration Project Assistance.

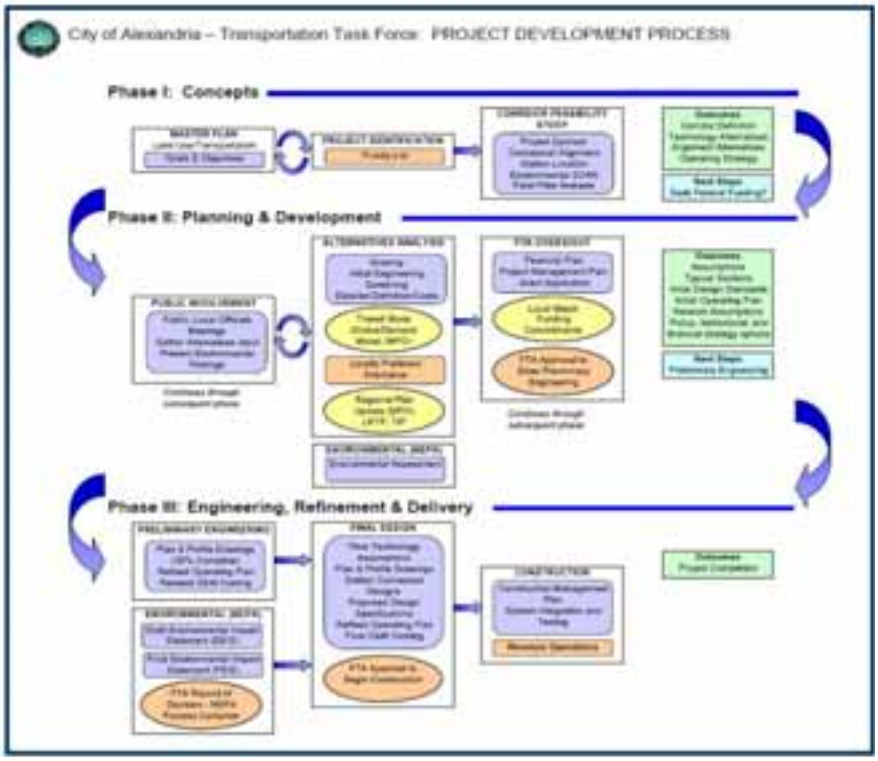
Under the **Virginia Multimodal Public-Private Partnership Act of 2003** - administered through the department, private entities are allowed to propose innovative solutions for designing, building, financing and operating transportation improvements. Typically, there are cost and time-savings associated with public-private partnerships as the private sector often has more appropriate incentives to limit costs than the public sector.

SAFETEA-LU Enhancement Funds - These funds are available for ancillary improvements and may also be useful for implementing other elements of the Master Plan. Primary applications include bike / pedestrian improvements and landscaping / beautification.

Northern Virginia Regional Fees - Currently pending state legislation to authorize a combination of regional fees that would be apportioned by the NVTA. These regional funds would be distributed by jurisdiction, assuring that locally generated revenues support projects that benefit the jurisdiction. Set asides for WMATA and Virginia Rail Express (VRE) would be included in this funding mechanism.

Implementation

The transit concept that is presented in this plan is an innovative and ambitious proposal that will challenge City leaders and residents throughout the implementation process. The proposed transit corridors and services must be developed from a concept level to an operating transit service following a process that will be context sensitive, provide ongoing opportunity for public involvement and preserve eligibility for federal funding to support implementation. As illustrated in the graphic below, the development process that will be followed is intended to identify and evaluate increasingly refined alternatives based on information that becomes broader in scope and more detailed during each development phase. Progressing from the initial corridor feasibility studies through alternatives analyses, environmental impact assessments, and preliminary and final engineering to construction and initiation of service, the process is open for public input as key implementation decisions (such as the preferred transit route and mode for a particular corridor, the level of service to be provided, the type (s) of transit priority that will provided in individual corridor segments, and the locations of stations and stops) are being made. For any individual corridor, this process may take six to ten years to complete.



During the implementation process, it may be determined that providing fully dedicated transit lanes or running ways along the full length of the corridor may not be possible due to prevailing constraints. Under these circumstances, it may be necessary to employ other transit priority techniques, such as operating in mixed traffic with transit priority at signalized intersections and "queue jumping" in critical congestion areas, in certain corridor segments in order to achieve a feasible implementation plan.

A key element of the project development process is the preparation of environmental impact documents pursuant to the National Environmental Protection Act (NEPA) to ensure that information is available for public officials and citizens to properly balance infrastructure development, economic prosperity, health and environmental protection, community and neighborhood preservation, and quality of life issues. The potential project impacts that are required to be identified, evaluated and documented in these environmental evaluations include several factors that have already been identified as early community concerns. These include: air quality; environmental justice; historic, archeological and cultural resources; noise and vibration (both during construction and operation); historic sites; social and economic impacts (factors influencing the character and nature of the community); and transportation (both traffic and parking).

Actions & Strategies

In order to implement the proposed transit concept and to enhance the transportation network for the City of Alexandria the City has identified the following actions and strategies. All action items have been developed in order for the City and the public to track progress toward achieving the overall goal for the Transit Concept Plan.

T1. The City will conduct extensive public outreach to educate citizens and stakeholders on the proposed concept, the process and to determine where the greatest support lies for implementation of a major transit investment.

- T1.A. The City will hold public meetings on transit plans and investments.
- T1.B. The City will develop a website dedicated to the Transit Concept Plan.
- T1.C. The City will develop informational brochures that explain the Transit Concept.

T2. The City will coordinate closely with adjacent jurisdictions, specifically Arlington County, Prince George's County in Maryland, Fairfax County, WMATA, the City of Fairfax and other stakeholders to ensure that the City Transit Concept is integrated into existing services where feasible and to explore opportunities for future connections that would provide for enhanced regional connectivity.

- T2.A. The City will designate a regional liaison to continually coordinate and keep up to date with the plans and actions of neighboring jurisdictions.
- T2.B. The Regional Liaison will conduct initial meetings with representatives of adjacent jurisdictions.
- T2.C. The Regional Liaison will establish a schedule of quarterly meetings with regional representatives to maintain an active dialogue.

T3. The City will prioritize transit corridors for investment.

- T3.A. The City will establish a prioritized list of transit corridors.
- T3.B. The City will initiate one or more feasibility studies to conduct a more detailed analysis for the highest priority corridor(s) in order to determine:Conceptual Alignment and Engineering; Proposed Station Locations; Transit Vehicle Technology and Suitability; Initial Scan of Environmental Issues; Fatal Flaw Analysis. The City will develop and issue an RFP for a feasibility study of the highest priority corridor.

T4. The City will develop corridor-specific plans for dedicated transit lanes along these corridors and ensure that new developments do not preclude development of dedicated transit lanes.

- T4.A. The Department of Transportation and Environmental Services (T&ES) will coordinate with Planning and Zoning (P&Z) to establish a framework for identifying high priority rights-of-way.
- T4.B. T&ES will coordinate with P&Z to establish corridor specific plans and/or overlays for the highest priority corridor (as established under T3.A.).

T5. The City will identify locations for smart stations that will serve both the new system and existing transportation modes.

- T5.A. The City will establish a list of prioritized locations for smart stations and stops.
- T5.B. The City will coordinate with DASH and other existing services to identify priority areas for transit stop retrofits to transform existing stops to meet the Transit Concept vision for Smart Stations and Stops.

Actions & Strategies

T6. The City will ensure that development and redevelopment does not preclude efforts to expand public transit infrastructure.

T6.A. The City expects that any amendment to the Potomac Yard/ Potomac Greens Small Area Plan which results in an increase in density beyond what is currently approved will include reasonable provisions to address the development and funding of an additional Metrorail Station.

T6.B. The City expects that any proposed amendment to the Eisenhower West Area Plan, the King Street Metro/Eisenhower Avenue Small Area Plan or the Seminary Hill Small Area Plan that includes land in the Eisenhower Valley and that proposes an increase in density beyond what is currently approved shall study the feasibility of the development and funding of an additional Metrorail Station. If a City-directed feasibility study concludes and City Council agrees that a new Metrorail station is viable and desirable, then any proposals to add additional density to the Eisenhower Valley sections of the above mentioned plans must include a specific plan to support the development of an additional Metrorail station on Eisenhower Avenue to serve the Valley.

T7.The City will further identify specific transit mode technology and newest techniques best suited in the identified transit corridors and for the system as a whole.

T7.A. The City will implement a technology pilot program to test the success of various transit mode technologies throughout the City.

T7.B. The City will dedicate funding toward the implementation of technology into existing and future transit services.

T7.C. The City will coordinate the development and deployment of transit information technologies with regional service providers to provide seamless delivery to transit users.

T8. The City will integrate existing DASH bus service with new transit system elements for DASH to serve as a high frequency feeder system.

T8.A. The City will coordinate with Dash to determine proposed routes for a feeder system.

T8.B. The City will work with Dash to develop an operations plan for feeder systems.

T8 C. The City will coordinate the development and deployment of transit information technologies with regional service providers to provide seamless delivery to transit users.

T9. The City will incorporate traffic signal priority, traffic circulation changes, pedestrian and other on-street enhancements into the new system for the benefit of transit vehicles and riders.

T9.A. The City will develop a prioritized list of locations for transit system spot improvements.

T9.B. The City will earmark funds for the completion of priority spot improvements.

T10. The City will create Transportation Management Plans, Transit Overlay Zoning Districts, Parking Management Zones, etc. to coordinate efforts to support the system.

T10.A. T&ES will work in coordination with P&Z to develop revised Transportation Management Plan requirements with the goal of creating a more consistent, integrated approach to Citywide transit issues within individual TMPs.

T10.B. T&ES will work in coordination with P&Z to develop a citywide comprehensive parking management plan.

T11. The City will investigate potential funding available through existing, new, and innovative revenue sources.

T11.A. The City will develop a funding priority plan that identifies potential funding opportunities, applicability, deadlines, and requirements for requesting funds.

T11.B. The City will identify a revenue source to be dedicated toward actual investment in and/or matching funds for transit improvements.

Actions & Strategies

T12. The City will develop an extensive public outreach and marketing campaign to energize the citizenry around Alexandria's transportation future

- T12.A. The City will create a website, email list, posters and other marketing materials to educate citizens on the vision for the future, benefits, and how they can make a difference in the City.
- T12.B. The City will develop a logo for the overarching transportation plan initiatives.

T13. The city will coordinate with pertinent Alexandria Boards and Commissions, such as the Commission on Aging and The Alexandria Commission on Persons with Disabilities, to ensure that the special transportation needs of all citizens are considered.

- NETWORK
- POLICIES & SUPPORTING INFRASTRUCTURE
- SAFETY

Pedestrian

THE CITY WILL MAKE WALKING A PART OF PEOPLE'S EVERYDAY LIVES BY PROVIDING PLEASANT, SAFE AND ACCESSIBLE CONNECTIONS THAT ENCOURAGE AND REWARD THE CHOICE TO WALK

Introduction

Source: Alexandria Convention and Visitors Association/ACVA

"Pedestrians are the lost measure of a community; they set the scale for both center and edge of our neighborhoods."

This oft-used quote by architect Pete Calthorpe is particularly appropriate in Alexandria, where we have a history of creating both walkable places and auto-dependent development. Walking was a central consideration in the street layout of Old Town where a natural inclination toward small blocks, street trees and a blend of building types helped this seaport grow into a thriving city and, today, a popular tourist destination. Nearby neighborhoods including Rosemont and Del Ray also have narrow, tree-lined streets with sidewalks that help encourage community engagement and diversity. But this pattern was not replicated everywhere in Alexandria and, today, we sometimes bemoan this missing ingredient without truly understanding the importance of walkability.

The most important elements of walkability are easily defined but often elusive. We obviously need places to walk within walking distance. Also vital are well-connected streets with pleasant sidewalks or paths, attractive landscaping and easy-to-cross intersections. The character of traffic is arguably most important: If our streets are too wide or is traffic is too heavy or fast, people will not walk.

What's Different about this Plan for Pedestrians?

- Focus on a holistic approach to improving walkability across Alexandria with measurable goals in engineering, enforcement, encouragement, education and safety
- It concentrates on improving walkability within the walkshed around key transit stops
- Improved coordination between transportation and land use planning to encourage and reward walking in areas of residential density and mixed uses
- Encourages people to integrate walking into their daily routines by providing safe routes to school and transit access

Issue:

Alexandria has qualities of both an auto-oriented suburb and an urban historic seaport. As it continues to grow, we must seek new ways to improve pedestrian mobility that build community and encourage safety.

Solution:

Safe and pleasant accommodation of pedestrian travel on every road, across every intersection and to every destination in Alexandria.

By making Alexandria more pedestrian friendly, we will take a huge step toward making our neighborhoods more livable and improving our overall quality of life. In many ways, walking is the most critical element of this Transportation Master Plan because it touches upon so many aspects of community development: economic growth, urban design, engineering and civic engagement. It is both intensely personal – involving questions of personal safety or aesthetics – and critical to the public realm.

This transportation oriented chapter takes a policy approach to improving walkability in Alexandria. It builds on the City's existing small area plans, urban design plans and landscape guidelines. Where those documents provide specific, context-sensitive standards related to walking, a similar approach here would be too prescriptive. A future Pedestrian Design Guide will augment this master plan and accomplish many of those goals.

Most importantly, the document recognizes that walking is a key mode of transportation. In Alexandria, pedestrians have long been valued for their contribution to urban vitality but walking has not, until recently, been considered a serious component of the modern transportation system.[1] This document articulates a bold new vision for our city in which walking should be simply the safest, most convenient and enjoyable way to get around.

This plan outlines a systematic strategy for designing, building, maintaining and improving the pedestrian network citywide. The City Council's 2004 Strategic Plan includes laudable principles of walkability and many of Alexandria's small area plans incorporate initiatives that support and actively encourage walking. This transportation-oriented chapter will augment our existing plans by linking transportation and land-use concerns, providing context and setting a new vision for pedestrian travel where we also persuade an increased percentage of residents to use transit.

One final note: The term 'pedestrian' is used throughout this plan to include people who walk, sit or stand in public spaces or use a wheelchair or other mobility assistance device.[2] Pedestrians may be people with disabilities, children, shoppers, dog walkers or businesspeople. The principles of universal access work to the benefit of everyone.

What Do Alexandrians Say?

Key Pedestrian Workshop Findings

Community Meeting—July 3 & 4, 2003

- Consistent sidewalk structure and placement, better crosswalk signage, fix crossing lights
- Countdown to all signals (give pedestrians more time)
- Clear, wide sidewalks, attractive medians
- More sidewalks on the West End
- Create pedestrian-friendly King Street Metro area
- More pedestrian connectivity through dead-end streets
- Consider pedestrian access in future developments
- Introduce ground floor retail, streetscape, public art and sidewalks around Metro stations

Pedestrian Concept Plan

"Streets and their sidewalks… the main public places of a city are its most vital organs."
– Jane Jacobs, "The Death and Life of Great American Cities"

Source: Dan Burden, Walkable Communities

Overarching Goal:

Walking will be the safest, most convenient and enjoyable way to get around in Alexandria.

The purpose of the Pedestrian chapter in the Transportation Master Plan is to establish the framework for new policies and improvements that will make Alexandria more pedestrian friendly and increase the likelihood that our residents will choose walking as a mode of transportation.

The plan includes a series of policy level goals related to Engineering, Encouragement, Education and Safety. It also outlines a process for evaluating the City's progress with measurable benchmarks and a series of Actions & Strategies. Many of these strategies build upon the City Council-adopted Community Pathways initiative.

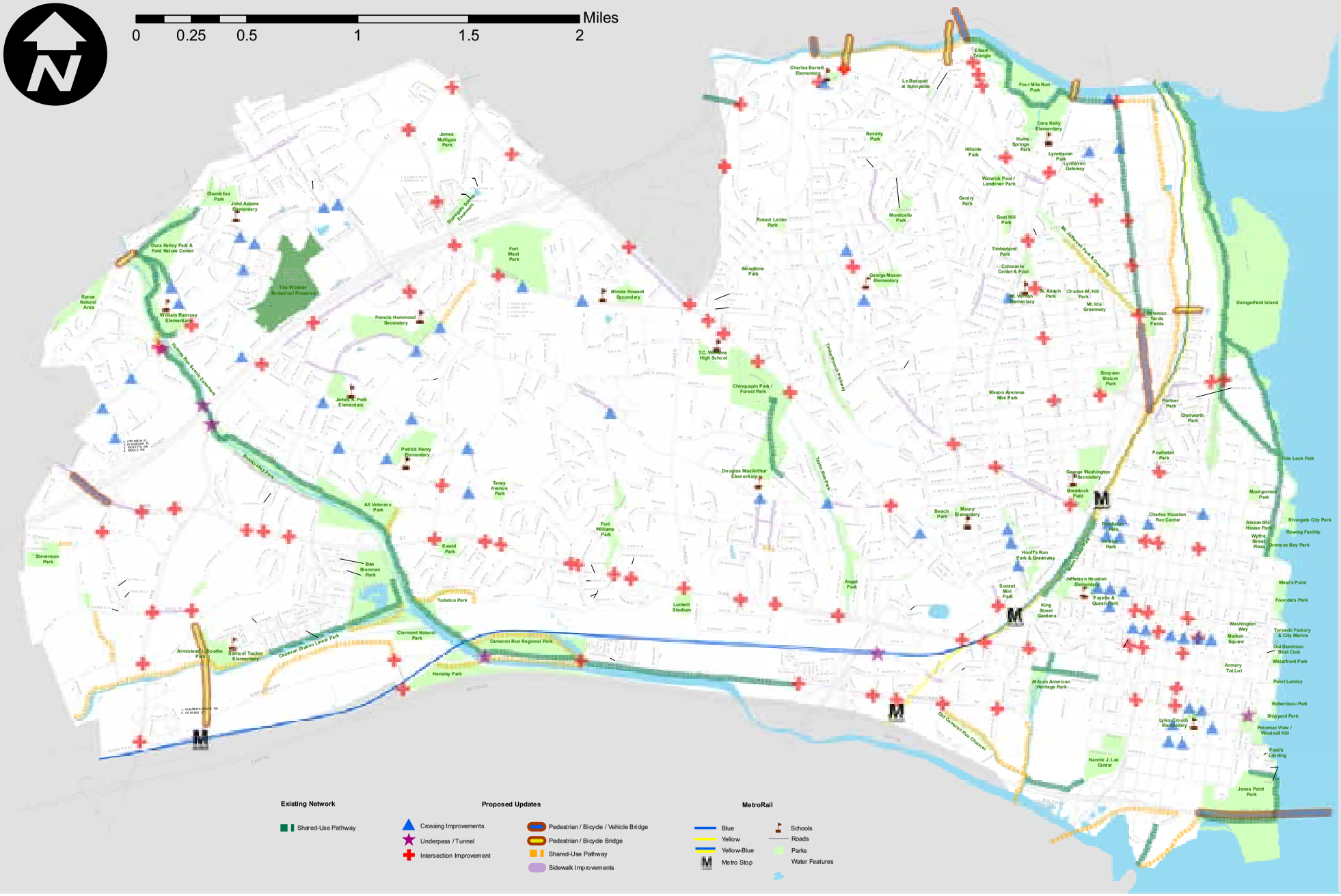
The accompanying "City of Alexandria Proposed Pedestrian Network & Infrastructure" map is a macro-level view at the many updates needed to make Alexandria more walkable. Key projects on this map include nearly 80 intersections in need of safety enhancements, nearly two dozen sidewalk projects, nine miles of new shared use trails, four new bridges for pedestrians and bicyclists only, and five underpass or tunnel improvement projects.

A citywide Pedestrian and Bicycle Mobility Plan underway in 2007 will provide a blueprint for 5-10 years worth of infrastructure improvements that will improve access for persons with disabilities, older adults, pedestrians and bicyclists. This plan to be published later in 2007 will provide a more fine-grained roadmap and allow the City to prioritize the limited funding available for such improvements.

Pedestrian Concept Goals

1. **Engineering:** The City will provide a continuous, connected and accessible network that enables pedestrians – particularly children, older adults and those with mobility impairments – to move safely and comfortably between places and destinations and encourages walking.
2. **Encouragement:** The City will encourage mobility for all pedestrians by removing barriers to accessibility and promoting walking as a means of improving health and active lifestyles.
3. **Education:** The City will develop Safe Routes to School Programs and awareness initiatives that address pedestrian safety, rights and responsibilities.
4. **Safety:** The City will create a safe pedestrian environment through effective law enforcement detailed crash analysis and implementation of safety countermeasures.

City of Alexandria: Proposed Pedestrian Facilities Updates


N
0
0.25
0.5
1
1.5
2
Miles
Existing Network
Shared-Use Pathway
Proposed Updates
Crossing Improvements
Underpass / Tunnel
Intersection Improvement
Pedestrian / Bicycle / Vehicle Bridge
Pedestrian / Bicycle Bridge
Shared-Use Pathway
Sidewalk Improvements
MetroRail
Blue
Yellow
Yellow-Blue
Metro Stop
Schools
Roads
Parks
Water Features
Chambliss Park
John Adams Elementary
Dora Kelley Park & Ford Nature Center
Rynex Natural Area
William Ramsey Elementary
The Winkler Botanical Preserve
James Mulligan Park
Francis Hammond Secondary
Fort Ward Park
Minnie Howard Secondary
James K. Polk Elementary
Patrick Henry Elementary
Taney Avenue Park
All Veterans Park
Ewald Park
Ben Brenman Park
Stevenson Park
Tarleton Park
Armistead L. Boothe Park
Samuel Tucker Elementary
Cameron Station Linear Park
Clermont Natural Park
Cameron Run Regional Park
Hensley Park
Brookville Park
Holmes Run Stream Easement
Fort Williams Park
Lucliett Stadium
T.C. Williams High School
Chinquapin Park / Forest Park
Douglas MacArthur Elementary
Angel Park
Charles Barrett Elementary
Le Bosquet at Sunnyside
Beverly Park
Robert Leider Park
Woodbine Park
Montclair Park
George Mason Elementary
Timberland Park
Colosanto Center & Pool
Goat Hill Park
Gentry Park
Wanwick Pool / Landover Park
Hillside Park
Hume Springs Park
Cora Kelly Elementary
Lynnhaven Park
Lynnhaven Gateway
Eisenhower Triangle
Four Mile Run Park
Mt. Jefferson Park & Greenway
St. Asaph Park
Charles W. Hill Park
Mt. Ida Greenway
Mt. Vernon Elementary
Potomac Yards Fields
Daingerfield Island
Simpson Stadium Park
Mason Avenue Mini Park
Portner Park
Chetworth Park
Powhatan Park
Tide Lock Park
Montgomery Park
Rivergate City Park
Rowing Facility
Dronoco Bay Park
Alexandria House Park
Wythe Street Plaza
Charles Houston Rec Center
Beddoe Park
Maury Elementary
Beach Park
George Washington Secondary
Beddoe Field
Hooff's Run Park & Greenway
Jefferson Houston Elementary
Fayette & Queen Park
Sunset Mini Park
King Street Gardens
Washington Way
Market Square
Torpedo Factory & City Marina
Old Dominion Boat Club
Waterfront Park
Armory Tot Lot
Point Lumley
Roberdeau Park
Shipyard Park
Potomac View / Windmill Hill
Ford's Landing
Jones Point Park
African American Heritage Park
Lyles-Crouch Elementary
Nannie J. Lee Center
Old Dominion Run Channel
Holmes Run Stream Easement
Tibbs Run Park
Timberlake Parkway
Mt. Jefferson Park & Greenway
Hooff's Run Park & Greenway
Cameron Station Linear Park
Brookville Park
Holmes Run Stream Easement
Old Dominion Run Channel
BELTWAY
CAPITAL
BRADDOCK
KING
DUKE
QUAKER
SEMINARY
MONTGOMERY
FAIRFAX
GLEBE
WASHINGTON
JEFFERSON
MONTGOMERY
ERGERNER
GREENWOOD
MERMAID
MIDDLE
MOUNT
DORN
LAUR
LEE
HAMPTON
HENRY
BEAUREGARD
SEMINARY
MOUNT
VERNON
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RUSSELL

Benchmarks & Evaluation

Quantitative benchmarks make it possible to carry out a continuous assessment and annual evaluation. These benchmarks will be listed as Performance Measures in the Pedestrian Element of the Transportation Master Plan and will be submitted in an annual report to City Council.

- The proportion of people walking to work in Alexandria shall increase from 3% to 5% by 2011.
- Working with the Alexandria City Public Schools, the City will establish a system for counting the number of children who walk to school and the number shall increase 5% every year by 2011.
- The number and percentage of people who walk to access Alexandria's four Metrorail stops will increase (at Eisenhower Ave 1,370 people or 75% walked to the station). Other modes of access include bus and connecting rail, drop-offs or drove and parked. King Street (5,260 people; 62%), Braddock Road (2,700 people; 61%), Van Dorn (580 people, 15%)[3] to a level that is consistent with adjacent development and new transit options.
- The number of pedestrian-motor vehicle crashes (66 in 2004, 87 in 2005 and 36 through Oct. 1, 2006) will hold constant or decrease through 2011.
- The proposed sidewalk and shared-use path network will be 50% complete by 2011.
- Improved maintenance will result in a decrease in requests by 50% in 2011.
- Bi-annual special events in spring and fall will encourage active living and promotion walking as a means of transportation and recreation.
- More than 50 percent of elementary aged school children will receive pedestrian safety education by 2010.

What Do Alexandrians Say?
Key Pedestrian & Bicycle Workshop Findings

Community Meeting—July 3 & 4, 2003

At the bicycle & pedestrian community meeting, citizens "voted" for where they thought City money would be best spent.

- **Infrastructure: 61.7%**
- **Safety: 28.8%**
- **Promotion: 9.5%**

Goals

Goal 1. Engineering

The City will provide a continuous, connected and accessible network that enables pedestrians – particularly children and those with mobility impairments – to move safely and comfortably between places and destinations

Source: Dan Burden, Walkable Communities

The city will seek to establish and maintain a system of Community Pathways to serve all types of pedestrian trips, particularly those with a transportation function. Key projects outlined in the pedestrian element include intersections in need of pedestrian safety enhancements, high-priority crosswalks, sidewalk projects related to Metrorail and proposed Smart Shelters and, finally, pedestrian improvements that will encourage walking to school. Pedestrian initiatives also include new multiuse trails, pedestrian bridges and underpass/tunnel improvement projects.

Engineering improvements must also incorporate proposed passenger amenities proposed in the transit chapter of the Transportation Master Plan. In addition to improving safety, pedestrian amenities such as benches, information kiosks and traveler information systems will enhance the pedestrian experience and reward the choice to travel using the City's pedestrian and transit systems.

The objectives below outline general policy recommendations for improvements that will make Alexandria more pedestrian friendly. The accompanying "Levels of Service" graphic and table on the following page outline in graphic format the key issues related to walkability.

Objectives

1. Use the prioritized recommendations from the city's Pedestrian and Bicycle Mobility Plan (www.AlexRide.org) to improve locations citywide where core pedestrian design issues are compromised. This should include:
   a. Providing a continuous, connected, inviting and accessible sidewalk network. The minimum unobstructed clear width of new sidewalks will be context sensitive but should be 14 feet or more in urban areas and never less than five feet even in the most restrictive environments. Added priority will be given to filling gaps in the sidewalk network on arterial and collector roadways.
   b. Ensuring that accessible curb ramps exist at all pedestrian crossings
   c. Improving pedestrian safety and providing better service at street crossings by providing countdown timers, accessible pedestrian signals and reducing vehicular phases to provide pedestrian intervals long enough for children, older adults and persons with disabilities. Pedestrian safety features shall be used at all signals to provide a better separation between vehicles and pedestrians.
   d. Providing pedestrian scale lighting that encourages safe, pleasant walking and provides for necessary visibility at designated street crossings
   e. Improving safety and accessibility at bridges, overpasses, underpasses, tunnels and associated access and exit areas
   f. Ensuring that street furniture, dining areas, landscaping and utilities are compatible and complementary to adjacent sidewalks. The City will actively work with property owners to maintain accessible, unobstructed sidewalks.
2. Working across city departments, the City will produce a Pedestrian Design Guide issued by the City Engineer in 2009.

CITY OF ALEXANDRIA TRANSPORTATION MASTER PLAN
WALKING– LEVELS OF QUALITY

	EXEMPLARY	*EXCELLENT*	*GOOD*	*FAIR*	*POOR*
Sidewalks Walkability increases with added width (five feet is a minimum). Greater width is needed when street furniture, utilities, dining areas or signs intrude on the "clear" space. Sidewalks should have clean edges and buffers to the street – either vegetation or parked cars. They should not pass long, blank walls without breaks or details. Sidewalk material should be firm, stable and slip resistant with no interruptions in grade. Conditions improve as the number of driveways is reduced. Curbs should be non-mountable.					
Crossings Crossings should occur at well-marked crosswalks, with pedestrian signals if appropriate. Short signal cycles provide clear pedestrian priority. ADA accessible curb ramps are essential – preferably two per corner and oriented at perpendicular crosswalks. Tight curb radii (15 to 20') forces traffic to slow. Curb extensions may be appropriate, particularly mid-block. Stop bars can be set back and enhanced signing or lighting can be used selectively for added attention. On multi-lane roads, refuge islands are essential.					
Main Streets Walkways along "main" streets should be wide and clear, particularly in shopping areas. Front doors should open to the street, not parking lots. Blocks should be short – a typically 300 feet with a 1,200 foot perimeter – so that people may cross frequently. Most people will walk 150 feet to get to locations rewarding their travel. Context-sensitive lighting and street furniture are essential. Street trees provide shade and street character.					
Local Streets Local streets should be narrow and well-landscaped with on-street parking to act as additional sidewalk buffer. Driving speeds of 15-20 mph are best and 20-25 mph is acceptable. Homes should be near the street. Lanes should be narrow and new local streets should be designed to encourage slow vehicular movement. Traffic calming may slow traffic and encourage pedestrian activity.					
Avenue/Boulevard Sidewalks along arterials should be wide and well buffered since these streets provide key transit access. Planter strips and bicycle lanes create essential separation from vehicles. Street trees, other landscaping and medians help slow motorists. Longer pedestrian crossings should be broken into separate threats. Median crossings or refuges (4' minimum, 8-10' preferred) can be angled forcing people to look at motorists before stepping into their path.					

Photos provided by City of Alexandria, Dan Burden, PBIC Image Library and Michael

Goals

Goal 2. Encouragement

The City will encourage mobility for all pedestrians, regardless of age or ability, by promoting walking as a means of improving health and increasing transit usage.

Increasing transit usage and enabling transit to compete effectively with automobiles is one of the overall goals of the Transportation Master Plan. To do this, creating a pedestrian friendly environment going to and from transit stops is an essential goal of the entire pedestrian element.

Current estimates suggest that by the year 2030 there will be more than 36,000 daily transit trips from Alexandria to Washington, DC and some 17,647 within the city limits of Alexandria.[4] Increasingly, Alexandrians are turning to mass transit to provide a dependable and convenient way to work. A recent market study for the City of Alexandria revealed that 62 percent of survey respondents who used mass transit walked less than five minutes to a DASH stop and many said that better pedestrian connections would encourage them to use transit more often.[5]

Similarly, a recent Health Survey emphasized the need for Alexandria to be a healthier city and specifically focused on the problems of childhood obesity.[6] City sponsored outreach and events that educate the public regarding the health benefits of walking are a crucial component of any transportation master plan.

Objectives

1. Coordinate across city departments and with non-profit partners to educate the public regarding the health benefits of walking so that people can better integrate walking into their daily lives.
2. Support events and activities that promote walking and multi-modal transportation initiatives.
3. Provide formal and informal activity-oriented programs such as community workshops and educational programs, specifically those that encourage the relationship between walking and public health or walking and transit usage.
4. Work with the Alexandria Health Department to monitor current health trends and identify sources of private funding that may be directed to local initiatives.
5. Work with DASH and WMATA to continually encourage walking as a safe and convenient means of accessing transit stops.

Goals

Goal 3. Education

The City will develop Safe Routes to School Programs and awareness initiatives that address pedestrian safety, rights and responsibilities.

The City of Alexandria should seek to educate school-aged youth, community organizations, business groups, civic associations and others on the safety, health and civic benefits of walkable communities. The city's pedestrian initiatives such as the Community Pathways effort and a new Safe Routes to School program seek to promote safe and courteous walking and driving through targeted outreach programs. To date, examples of successful programs include the Street Smart initiative and Walk to School Day.

Driver education tends not to stress pedestrian prerogatives and the City has only recently begun to provide pedestrian education. Conveying the message to non-English speaking residents is also proving increasingly important. Because Hispanics are three times as likely as Whites to be hospitalized for a pedestrian injury, the City must effectively target its education programs to reach this group. Our most dangerous areas for walking tend to have similar characteristics: high-speed roads, heavy traffic, poor pedestrian facilities, and dense populations of people who lack automobiles.

Objectives

1. Provide resources to support creation of programs that encourage walking and promote pedestrian safety such as walking commute campaigns.
2. Use the Safe Routes to School program to educate school children about safe walking practices.
3. Broaden the scope and reach of the Metropolitan Washington Council of Governments "Street Smart" pedestrian education program, especially with respect to provision of outreach to non-English speaking audiences.
4. Publicize the pedestrian network (particularly trails, shared-use paths and amenities such as the Alexandria Heritage Trail) via the internet and using maps, brochures and booklets.
5. Work with residents, community groups, businesses, civic associations and all property owners to expand the network of walkways on existing public rights-of-way and in new acquisitions of open space.
6. Work with the Alexandria Commission of Persons with Disabilities to provide wayfinding orientation for persons with visual impairments and improve education about the City's audible pedestrian signal network.
7. Solicit public input on pedestrian problems via annual reports to City Council, through the city's website, public access television and commercial media. Additionally, the City should regularly publicize listings that enable and encourage citizens to contact the City with pedestrian problems.

Goals

Goal 4. Safety

The City will create a safe pedestrian environment through effective law enforcement and implementation of pedestrian safety countermeasures.

The overall intent of the policies related to Safety is to create a street environment that ensures pedestrian safety. The Alexandria Police Department (APD) has reported approximately 75 pedestrian accidents each year since 2004,[7] with many near-misses and minor incidents unreported. By reviewing accident data for the last three years, the City is beginning to isolate where accidents are taking place and which demographic groups are at greatest risk.

According to the Metropolitan Washington Council of Governments, regional data indicates several themes[8]:

- Drivers were cited for a violation in about half of crashes.
- Pedestrian crashes are most likely to occur at the evening rush (5 to 7 pm) with morning (6 to 9 am) the second most likely. (Preliminary data in Alexandria correlates with this statistic where 18 of 47 pedestrian crashes in 2006 occurred in periods of low light or darkness.)
- Other things equal, the pedestrian crash rate tends to fall as the number of pedestrians at a location increases. There is safety in numbers. Doubling the number of pedestrians at an intersection already crowded with pedestrians will usually result in little, if any increase in pedestrian crashes
- Experience shows that it is possible to reduce pedestrian fatalities while increasing walking.

Our most dangerous areas for walking have high-speed roads and poor pedestrian facilities, together with people who lack automobiles. In the near future, the City will outline a process for the designation of "Priority Pedestrian Districts" – typically compact areas of intense pedestrian use where walking is intended to be the primary mode of travel. These areas are typically near key transit stops, schools or institutional buildings and may be given priority for public investment in pedestrian infrastructure.

Objectives

1. Traffic signals and their associated features should be used to improve pedestrian safety at intersections, especially those with a record of collisions. Standards for timing devices should be provided to allow older pedestrians and persons with disabilities sufficient time to cross safely.
2. Maintain the pedestrian network by removing obstacles including vegetation, keeping walks smooth and level, repairing curb ramps and maintaining safety at transit hubs.
3. Partner with the APD to monitor areas of pedestrian concern and ensure that officers understand pedestrian issues as well as pedestrian rights and responsibilities.
4. Focus efforts on safety violations by pedestrians, including jaywalking and proceeding against DON'T WALK signals
5. Seek to continually reduce conflict among pedestrians and bicyclists by designating separated bicycle lanes where appropriate.

Funding

A full summary of funding sources available for the implementation of pedestrian and bicycle programs and infrastructure is included in the Bicycle Section of the Transportation Master Plan.

Actions & Strategies

In recent years, the Alexandria City Council has made it a point to improve the pedestrian experience citywide. After several years of work, the Council on February 9, 2006 adopted a resolution in support of a Community Pathways initiative. At its most basic level, the Community Pathways program is an effort to help Alexandria become a more healthy community that provides safe and convenient choices for people to walk, bicycle and be physically active on a daily basis. “Our efforts to address these issues and transform Alexandria into a nationally recognized pedestrian- and bicycle-friendly City require a comprehensive plan and framework,” the memo said. “Instead of a focus on cars, this program will focus on people, neighborhoods, parks, schools, recreation areas and trails.”

The Community Pathways program and subsequent work sessions by the council-appointed Ad Hoc Transportation Task Force helped solidify a set of clear goals, timelines and a consolidated plan. The Pedestrian and Bicycle Mobility Plan currently underway will provide a blueprint for 5-10 years worth of infrastructure improvements and drastically improve access for persons with disabilities, pedestrians and bicyclists. This plan to be published later in 2007 will provide a fine-grained roadmap to accompany these Actions & Strategies. More importantly, it will allow the City to prioritize the limited funding available for such improvements

P1. Enforcement and Safety Action Items

- P1.A. Beginning in 2007, schedule quarterly pedestrian enforcement campaigns in areas where safety is of greatest concern, such as Duke Street and in Alexandria
- P1.B. Continue working with schools, Metro and DASH to identify high-priority crosswalk and intersection improvement projects

P2. Engineering Action Items

- P2.A. Working across city departments, develop a *Pedestrian Design Guide* to be issued by the City Engineer in 2009
- P2.B. Using data gathered in a citywide study of the pedestrian and bicycle net work implemented plan:
  - P2.B.i. Infrastructure accessibility improvements for those with mobility impairments
  - P2.B.ii. Improvements to the pedestrian network that promote access to transit
- P2.C. Implement planned Safe Routes to School improvements that will have the strongest likelihood of reducing morning traffic and improving pedestrian safety

P3. Encouragement Action Items

- P3.A. In FY 2007-2008, the City will introduce a stipend – similar to its transit subsidy – for employees who bicycle or walk to work at least four times per week
- P3.B. A checklist-style system that encourages connectivity and universal access in all new developments will be available for use in all development site review plans

Actions & Strategies

P4. Education Action Items

P4.A. Ensure that the planned Safe Routes to School program takes a holistic approach by including an educational component

P4.B. Planned 2007 updates to the City Bicycle Trail and Recreation Facility Map will also focus on walking and public transportation routes

P4.C. Reformat the alternative transportation website (www.AlexRide.org) to emphasize walking and include regular updates and feedback options for citizens

P5. Evaluation Action Items

P5.A. An annual Benchmark report will be presented to City Council with metrics provided by staff that outline the City's progress in: Reducing Maintenance Requests, Pedestrian Safety, Infrastructure Improvements, Education and Encouragement

P5.B. The City will seek input from citizens via web-based surveys and e-mail reports regarding its progress and areas of potential improvement

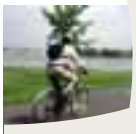
Endnotes

1. Portland Pedestrian Master Plan, p. 1.
2. City of San Diego, "Pedestrian Design," p. 63.
3. WMATA faregate data collected in April 2005, "Guidelines for Station Site and Access Planning," p. C-1.
4. Data from Baker Inc. map, "City of Alexandria: Year 2030 Daily Transit Trips" and based on Metropolitan Washington Council of Governments Round 6.4 Demographic Projections.
5. Survey Progress Report, City of Alexandria, June 19, 2006, Plus 2
6. "Alexandria Community Pathways" Memorandum, March 17, 2005.
7. City of Alexandria PRISM accident data, 2004-06
8. Metropolitan Washington Council of Governments, "Bicycle and Pedestrian Plan for the National Capital Region," Section 3-5, July 2006.

"More than transportation channels, streets are places suited for pedestrian interaction, where people choose to pause and socialize."

– Michael Southworth and Eran Ben-Joseph

Pedestrians Make Places . . .



- BIKEWAYS NETWORK
- POLICIES & SUPPORTING INFRASTRUCTURE
- SAFETY

Bicycle

THE CITY WILL BECOME BICYCLE-FRIENDLY BY MAKING ROUTINE ACCOMODATIONS FOR BICYCLISTS ON 'COMPLETE' STREETS AND PATHWAYS THAT ENABLE SAFE TRAVEL FOR ALL USERS

Introduction

A community that is bicycle-friendly is one that pays extra attention to its quality of life. While many cities extol the virtues of walkability, a select few aim to combine walking, bicycling and access to transit into complete transportation networks that make these places more livable and desirable for economic development. Alexandria aims to be one of these communities. With its Spin City 2009 initiative, the city believes it can become a community where people feel safe and comfortable riding their bicycles for fun, fitness and transportation. City Council and residents have been working together to encourage more bicycling which we believe will reduce congestion, improve air quality and encourage better public health.

Bicycling has long been an essential transportation and recreation option in Alexandria. The city's off-road shared-use path network includes some of the most popular trails on the East Coast and is one of Alexandria's greatest amenities. An on-street bicycle network was established in 1969 and includes the interconnected grid of streets in historic Old Town that makes Alexandria such a pleasant destination for over 1.5 million visitors annually.

What's Different about this Plan for Bicyclists?

- Spells out a holistic approach to becoming bicycle friendly with measurable goals in encouragement and education as well as engineering and enforcement.
- Focuses on making routine on-street bicycle accommodations that will improve safety for all bicyclists.
- Encourages better compatibility between bicycles and transit by focusing on end-of-trip facilities

Issue: *Bicycling for transportation is perceived as either unsafe or inconvenient*

Alexandria is a dense urban environment with some steep hills, a high demand for on-street parking, heavy traffic and complex intersections. Rising levels of air pollution and inactive lifestyles also create public health challenges that deter many potential bicyclists.

Solution:

Implement a citywide bikeway network to serve all users and trip types, provide end-of-trip facilities, improve bicycle/ transit integration, implement encouragement programs and improve safety

This bicycle transportation plan seeks to help Alexandria become a genuine bicycle-friendly community by expanding the city's on- and off-street bikeway network with targeted infrastructure investment and supportive policies. It is a blueprint for creating a safe and convenient bicycle network that encourages a greater number of persons to bicycle for some of their daily trips, shorter than five miles. With "complete streets" designed to enable safe travel by all users and routine accommodations for bicyclists, the City can make bicycling a viable transportation option in Alexandria.

Alexandria residents first began paying attention to bicycle transportation in 1969 when the City Council appointed a Task Force that created the backbone of the bikeway system as it is known today. In 1998 an inspired citizen-led effort resulted in the creation of Alexandria's "Bicycle Transportation and Multi-use Trail Master Plan," which called for an 85 mile network – 69 miles of on-street routes and 16 miles of off-street bikeways. Yet bicycle planning has only recently been integrated into mainstream traffic and transportation planning. Currently bicycle transportation accounts for a very small portion of trips in Alexandria – only about 0.6 percent according to the Metropolitan Washington Council of Governments. The City is now actively working to increase the number of bicycle trips by supporting and encouraging bicycle transportation.

The purpose of this bicycle transportation chapter is to provide a policy framework for accommodating bicycle travel throughout the city and update both the Transportation Master Plan of 1992 and the 1998 "Bicycle Transportation and Multi-use Trail Master Plan." This plan provides an overview with major goals and objectives. Many additional multi-modal opportunities will be identified in a more in-depth study – the City of Alexandria 2007 Pedestrian and Bicycle Mobility Plan. That study will support the Transportation Master Plan and provide a blueprint for 10 years of improvements to enhance the bikeways network.

What Do Alexandrians Say?

Key Bicycle Workshop Findings

Community Meeting—July 3 & 4, 2003

- Better connectivity through major developments
- Improve safety of existing trails
- Bike facilities on Duke, Seminary, Janneys and Quaker
- Create link from West End to Old Town
- Adequate trail width, center lines on bikeways
- Bike racks throughout the city
- Enhance customer service through Internet
- Focus more on Metro station bike/ped environment

Bicycle Concept Plan

"Alexandria should be a walking and biking city. This is not a silver bullet for our changing region, but it is a critical component of how we improve our quality of life. People should not always have to get in the car for a carton of milk or to meet friends for coffee." - Alexandria Community Pathways memo from City Council, May 17, 2005

Overall Goal:

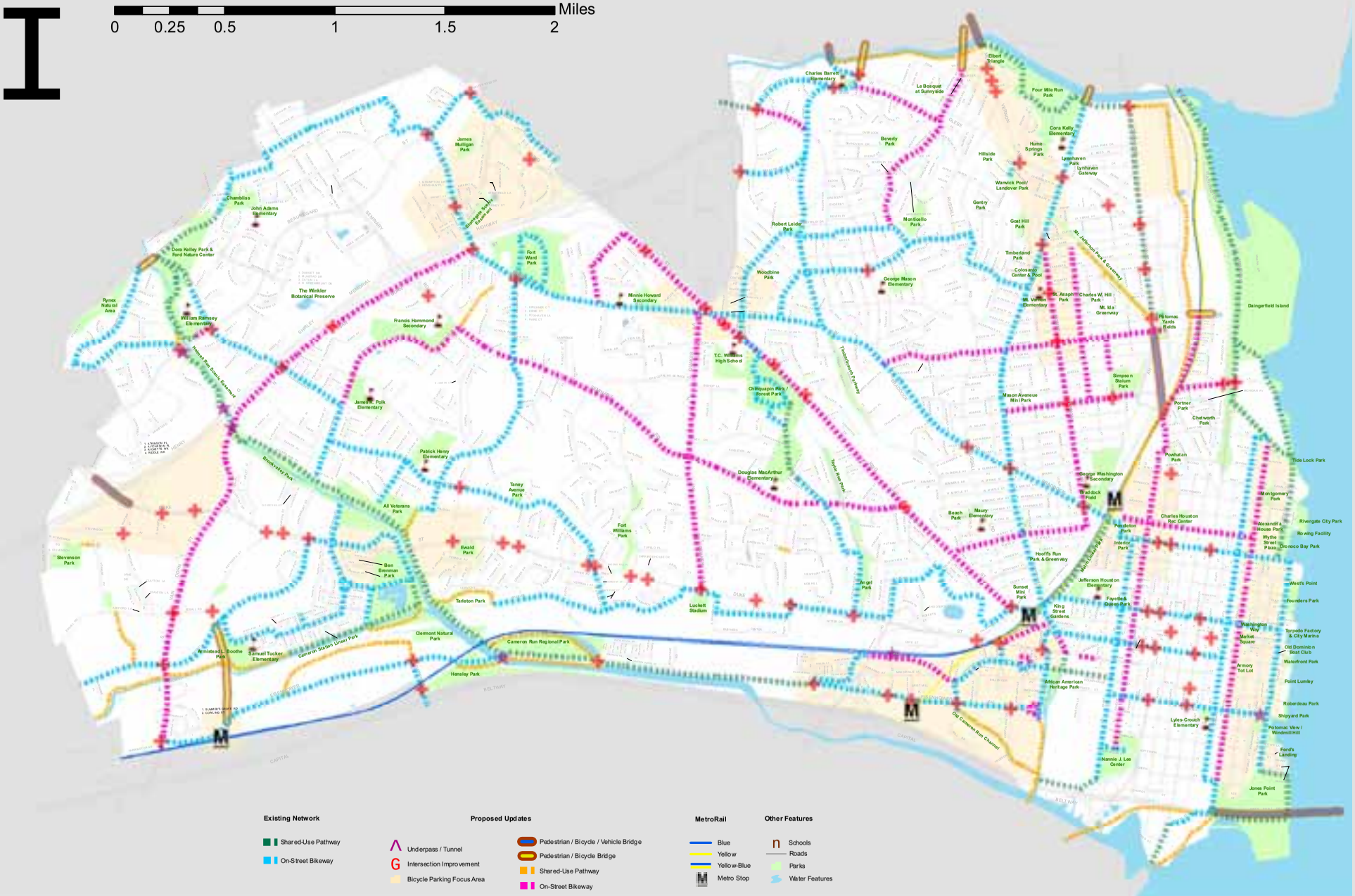
Make bicycling an integral part of the transportation system in Alexandria.

The Bicycle chapter of the Transportation Master Plan seeks to establish and maintain a bikeways system that serves all bicyclists' needs, particularly those with a transportation function. Key projects outlined in the plan include 24 miles of new on-street safety enhancements to existing bicycle routes, the addition of 16 miles of new on-street bikeways, and over 90 intersections in need of safety enhancements that will encourage both pedestrian and bicycle travel. The associated city map includes regions designated as "bicycle parking focus areas" where a nexus of employment centers, high residential densities and access to transit calls for increased focus on bicycle parking. Off-street enhancement projects include nearly nine miles of new shared use paths, four new bridges for pedestrians and bicyclists, three bridges that are primarily for vehicles but will feature major enhancements for pedestrians/bicyclists and five underpass or tunnel improvement projects. Additionally, projects shown in the Pedestrian Chapter that include crosswalk enhancements and sidewalks will accommodate bicyclists in all cases where practical. The City will also commit resources to maintenance of the network as well as continued education, encouragement and enforcement. A more detailed map will be available in the City of Alexandria Pedestrian and Mobility Plan, which will provide a blueprint for 10 years of improvements to the bicycle network.

Bicycle Concept Goals

1. **Engineering:** The City will complete a connected system of primary and secondary bikeways with ample bicycle parking to serve all bicyclists' needs.
2. **Encouragement:** The City will seek to increase bicycle usage and bicycle-transit connections through targeted outreach and encouragement.
3. **Education:** The City will develop and implement targeted Safe Routes to School Programs as well as additional programs for adult cyclists, and motorists.
4. **Enforcement and Safety:** The City will create a safe bicycling environment through effective law enforcement and implementation of bicycle safety enhancements.

City of Alexandria: Proposed Bicycle Facilities Updates



Benchmarks & Evaluation

Quantitative benchmarks make it possible to carry out a continuous assessment and annual evaluation. These benchmarks will be listed as Performance Measures in the bicycle chapter of the Transportation Master Plan and will be submitted in an annual report to City Council.

- The proportion of people bicycling to work in Alexandria shall increase from 0.5 percent to 3 percent by 2011 (see Endnotes for an explanation of these numbers).
- Alexandria City Public Schools will begin counting the number of children bicycling to school and this number shall increase 5% annually through 2011.
- The number of bicycle-motor vehicle crashes (13 in 2004, 17 in 2005 and 12 through Oct. 1, 2006) will hold constant or decrease through 2011.
- The proposed bikeway network will be 50 percent complete by 2011.
- The City will begin a log of maintenance requests related to its bikeways network, post the log online for public viewing and seek to reduce its maintenance backlog by a number to be determined.
- The City will add at least 500 new bicycle parking racks by 2009. In all new development bicycle parking will be introduced at a rate of 1:10 (at least one bicycle parking space will exist for every 10 vehicular spaces).
- Bi-annual special events in spring and fall will encourage bicycle use.
- All city-sponsored special events and public recreational facilities will supply plentiful bicycle parking.
- More than 50 percent of elementary aged school children will receive bicycle safety education by 2010.

What Do Alexandrians Say?

Key Pedestrian & Bicycle Workshop Findings

Community Meeting—July 3 & 4, 2003

At the bicycle & pedestrian community meeting, citizens "voted" for where they thought City money would be best spent.

- **Infrastructure: 61.7%**
- **Safety: 28.8%**
- **Promotion: 9.5%**

Goals

Goal 1. Engineering

The City will complete a connected system of primary and secondary bikeways with ample bicycle parking to serve bicyclists' needs.

This plan uses the term "bikeways" to refer to streets and shared-use paths either designed specifically for bicycle travel or with key design elements that support safe bicycle travel. A bikeway may be a street with a bicycle lane, a street with shared use lane markings or a shared-use (off-street) path. It is important to note that streets referred to as "part of the city's bikeway network" are different from other streets because they include some element that helps bicyclists feel safer while riding. Bicyclists are allowed on all streets in Alexandria, but not all streets may include design elements to improve real (or perceived) safety.

The vision of this plan is a 125-mile bikeway network throughout Alexandria that actively supports those who choose to use the bicycle for transportation. The City's long-term vision for its bicycle network is for it to be the equal of the best cities in the United States — an attractive, well-maintained and convenient network on which users will notice high quality design, construction and maintenance features. Bicyclists in Alexandria should feel safe and rewarded for their choice of using a bicycle. Bikeway facilities provided will be appropriate to the street classification, traffic volume and speed of vehicular traffic. Shared use path design will conform to national standards outlined in the American Association of State Highway and Transportation Officials (AASHTO) "Guide for the Development of Bicycle Facilities" and be designed to minimize the potential for user conflict.

Additionally, providing convenient, secure places to park is an inexpensive and effective way to encourage bicycling. Working citywide, we aim to increase short-term parking (i.e. less than two hours) and long-term spaces (i.e. indoor and/or covered parking or locker/shower facilities) near key transit hubs, office buildings and in retail centers.

Objectives

1. Add new bicycle lanes, signed bicycle routes and shared lane markings to expand the on-street bikeway network. Establish new (off-road) shared-use paths, improve existing paths and improve access to paths.
2. Use innovative designs and bicycle-specific treatments at intersections to improve safety.
3. Prioritize ongoing maintenance and repair of the bikeway network.
4. Expand the City of Alexandria bicycle parking program and ensure that bicycle parking and showers are included in all new development and construction, where appropriate.
5. All new off-street bikeways will be designed and built to national standards outlined in the AASHTO "Guide for the Development of Bicycle Facilities" and will seek to minimize the potential for conflict between pedestrians and bicyclists. Design modifications may be supplemented through education (signage and markings) and enforcement.
6. Increase the number of bicycle-transit trips through new and supportive infrastructure and outreach programs. This includes implementing a system for accommodating bicycles and bicycle racks on all DASH and Metro buses in the City.

CITY OF ALEXANDRIA TRANSPORTATION MASTER PLAN
BICYCLING – LEVELS OF QUALITY

	EXEMPLARY	*EXCELLENT*	*GOOD*	*FAIR*	*POOR*
On-Street Bicycle Lanes Bicycle lanes provide a dedicated space on the roadway for one-way bicycle travel and encourage predictable movement. Widths of 5 to 6 feet are most comfortable. Narrow bike lanes next to parking are not preferred. Bicycle lanes are best on streets with heavy traffic, arterials and boulevards. Some cities are experimenting with dedicated bicycle-bus lanes where on-street travel lanes may be shared by transit vehicles and bicycles.					
Crossings and Intersections Bicycle markings are generally not carried through intersections or across pedestrian crosswalks. However, "bicycle boxes" help protect bicycles at intersections by cueing them to the front of traffic. These boxes also provide added buffer for pedestrians. Short traffic signal cycles benefit both bicyclists and pedestrians. Bicycle lanes may be colorized for safety in conflict areas around intersections. Where key bicycle connections exist in parking lots, lanes may be designated but must be maintained often.					
Shared Lane Markings, Signage and Bicycle Routes Shared lane markings ("sharrows") are placed in a travel lane to encourage bicycles to ride outside the door zone of parked cars. Bicycle routes are designated on streets to narrow for bicycle lanes but good for bicycling. New bicycle route signs show directions and distance. They are placed only at decision points. Bicycling should be discouraged on sidewalks in business districts and only allowed if adequate width. Bicycle routes should not lead bicyclists onto sidewalks, particularly against the flow of traffic.					
Shared Use Paths Shared use paths often parallel high speed roads in access controlled environments. Paths can provide scenic and direct routes of travel. Widths can vary but must accommodate many users and modes. Where paths intersect with roadways, ramps and signage should be provided. Grade separated crossings are often huge obstacles – bridges may be too narrow and tunnels can be intimidating if poorly designed and/or maintained improperly.					
Parking Bicycle racks should support a bicycle in at least two places, allowing the frame and wheels to be locked using a U-lock or cable lock. An "inverted U" is the preferred rack. Racks should prevent the wheel of a bicycle from tipping and be durable and securely anchored. Racks should be placed in visible locations (covered if possible) and should not impeded pedestrian traffic. Racks should be located 36" away from either parallel or perpendicular walls.					

Goals

Goal 2. Encouragement

The City will seek to increase bicycle usage and bicycle-transit connections through targeted outreach and encouragement.

A successful commitment to improving bicycle transportation will require a holistic approach that includes encouragement programs and outreach in addition to infrastructure and safety improvements. Bicycling is a healthy, inexpensive, convenient and practical way to travel, particularly for short trips. That said, few people currently travel by bicycle and many people are not receptive to the idea of traveling by bicycle. Many cities have learned that focused outreach and social marketing programs will influence peoples' behaviors and attitudes, particularly when promoting the health benefits of bicycling. Outreach programs are also a relatively inexpensive means of encouraging a seamless integration of bicycling with other travel modes and choices.

This plan seeks to increase bicycle usage and bicycle-transit connections through targeted outreach and encouragement programs. Initially, the City will need to assess its existing ordinances, policies and regulations to identify those that support bicycle transportation and change ones that do not. However, these polices can be addressed more quickly when applied to new developments in the City's current site plan review. Equally important to the encouragement objective will be the City's capacity to promote bicycling as an activity that can improve health and provide recreation. There is good reason to continue current campaigns such as Bike to Work Day and develop new ones because these are cost-effective programs that continue to appeal to increasing numbers of people.

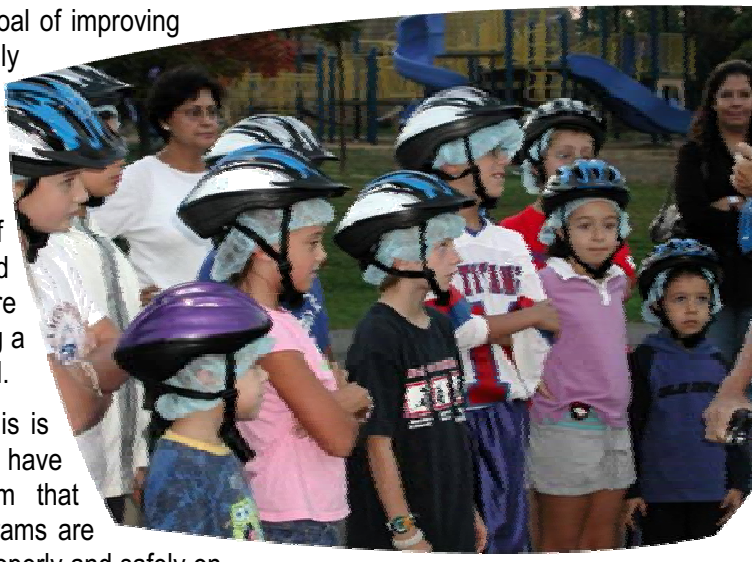
Objectives

1. Update City of Alexandria ordinances, policies and regulations to encourage bicycle transportation and the seamless integration of bicycling with transit.
2. Review all projects in the development and planning process to ensure they provide bicycle accommodations and access to facilities including showers, lockers and bicycle parking.
3. Continue programs such as Bike to Work Day and develop new, targeted promotion campaigns that can market bicycling as an alternative to the automobile.
4. Promote the health benefits of bicycling.
5. Partner with local business and tourism promotion organizations to promote Alexandria as a destination for bicycle tourism.

Goals

Goal 3. Education

The City will develop and implement targeted Safe Routes to School Programs as well as additional programs for adult cyclists, and motorists.



Education is a key component in achieving the City's goal of improving bicycle transportation and becoming a bicycle friendly community. This plan has already touched on the value of encouraging a share the road ethic to motorists and how bicyclists must follow the rules of the road. It has also outlined how social marketing campaigns can be used to encourage more usage and instill an ethic of user courtesy on shared-use paths. Yet without a detailed framework for incorporating education, we cannot be sure that young bicyclists will understand the value of wearing a helmet or that all bicyclists will follow the rules of the road.

When educating bicyclists, it is best to start young. This is why the City of Alexandria and many partners have collaborated on a Safe Routes to School program that emphasizes bicycle and pedestrian safety. These programs are also intended to teach young bicyclists how to bicycle properly and safely on shared-use paths, particularly in areas that are more urban and prone to heavy use. Continuing education programs can also reinforce bicycle education to adults and prospective bicycle commuters.

Partnering with other agencies and organizations will help deliver bicycle education programs more efficiently and in a cost-effective manner. The Safe Routes to School program is now supported with federal funds and is a proven method for training bicyclists at a young age. In the near future, it will be possible to reach thousands of Alexandria youth with messages that encourage frequent and safe bicycle travel. Finally, providing and distributing bicycle education material will provide Alexandria bicyclists with the information necessary to bicycle safely and securely. A key objective will be to improve the City's website to provide comprehensive information and support printing of a bicycle map that will be distributed to thousands of residents and visitors.

Objectives

1. Establish a Safe Routes to School program in public and private schools that includes Bicycle and Pedestrian Safety Education.
2. Deliver targeted bicycle education programs in a cost-effective manner by partnering with like-minded agencies and organizations.
3. Produce and distribute bicycle education material that includes an Alexandria Bikeways Map (to be updated bi-annually), annual newsletter/bicycle program update and an expanded bicycle program web site hosted by the City.
4. Reduce the incidence of bicycle theft through supportive city bicycle registration programs, educational outreach and enforcement strategies.
5. Use targeted outreach programs and collateral items to communicate issues related to trail etiquette and reduce conflicts between pedestrians and bicyclists on heavily used shared-use paths.

Goals

Goal 4. Enforcement & Safety

The City will create a safe bicycling environment and reduce user conflict on shared-use paths through effective law enforcement, detailed crash analysis and implementation of bicycle safety countermeasures.

Since 2004, nearly 20 bicycle accidents have been reported to the Alexandria Police Department each year, with many more unreported. This is due in part to lack of education by motorists and bicyclists, who must be encouraged to follow the rules of the road. The City of Alexandria believes it can reduce the frequency and severity of these crashes with a two-pronged effort. First, by working with the Alexandria Police Department to train officers on bicycling issues, we can ensure that enforcement strategies protect bicyclists and encourage bicyclists to use the rules of the road. Secondly, improving the reporting and analysis of bicycle crashes will suggest engineering, encouragement and education countermeasures to help prevent future crashes from occurring.

With targeted enforcement and safety improvements, we can change the perception of bicycle transportation in Alexandria to a mode of travel that is safe, secure and convenient. The overarching goal is for the City of Alexandria to make a systematic effort to improve bicyclist safety, sense of security and ease of passage at signalized intersections by using withdrawn STOP bars, white and blue marked crossings and bicycle traffic signals. Supporting encouragement strategies and outreach campaigns may improve the impact of the proposed objectives.

The City of Alexandria recognizes that its shared use paths are prone to a certain level of conflict among users, which can in turn lead to safety problems. While the City generally views these problems as measures of success-they demonstrate increasing usage among pedestrians and bicyclists-the City also works to identify trends or problem spots and remedy them if workable designs or management solutions are feasible. The City is increasingly working together with trail user groups to identify solutions, post “Share the Trail” and user courtesy signs along shared-use paths and trailheads.

Objectives

1. Encourage a share the road ethic among motorists and provide information about safe operating behavior around bicyclists.
2. Provide bicyclists with information and educational programs about safe bicycling and rules of the road.
3. Enforce traffic laws related to bicycling to reduce STOP sign running, wrong-way riding and riding on congested sidewalks.
4. Improve the reporting and analysis of bicycle crashes to suggest appropriate engineering, encouragement and enforcement countermeasures.
5. Target key intersections, shared-use path locations and primary conflict points between bicycles and vehicles for improvements.

Funding

There are a number of funding resources available to localities to fund bicycle and pedestrian related infrastructure improvements. Funding sources are local (City of Alexandria), regional (Northern Virginia Transportation Authority), state and federal (Virginia Department of Transportation and/or Federal Highway Administration). In addition, the City works with local homeowners associations and employers on Transportation Management Plans that may result in improved conditions for pedestrians and bicyclists, particularly when we are improving access to transit. The City may also collaborate with nonprofits to seek grants from private funding organizations to accomplish additional pedestrian or bicycle projects.

Funding sources have been broken into two categories: Federal/State and Regional/Local.

Federal/State

The Virginia Department of Transportation has developed a list of alternative transportation funding sources available to localities in Virginia. Alternative funding sources are defined as those that are not included in the annual interstate, primary, secondary, and urban allocations available through VDOT's Six-Year Improvement Program. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, passed by the U.S. Congress in 2005, eliminated some of these programs and created new opportunities. State and federal funding sources and programs, and their potential uses, are detailed in this report from March 2006, which is available through the Virginia Transportation Research Council as "Alternative Transportation Funding Sources Available to Virginia Localities" (FHWA/VTRC 06-R1).[2]

In some cases, the program described does not provide money above the normal annual allocations but rather allows the allocations for the primary, secondary, or urban system to be used for bicycle and pedestrian projects, following the standard VDOT project development process, or road improvement projects that use a simplified design and construction process.

VDOT Bicycle and Pedestrian Accommodation Policy

In March 2004, VDOT adopted a new policy that reads, in part: "VDOT will initiate all highway construction projects with the presumption that the projects shall accommodate bicycling and walking." Bicycle and pedestrian facilities are now planned, designed, and constructed similarly to roads and may be constructed with primary, urban and secondary system funds, in the same manner that primary highways and urban streets are constructed. More information can be found at http://www.virginiadot.org/bikeped.

Although this new policy requires bicycle and pedestrian considerations in all new roadway projects, many additional important funding sources include:

Safe Routes to School (SRTS)

The Safe Routes to School Program, created by Section 1404 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act (SAFETEA-LU), establishes a federally-funded grant program providing communities with the opportunity to improve conditions for bicycling and walking to school, in grades K through 8. The goals of the Program are threefold:

1. to enable and encourage children, including those with disabilities, to walk and bicycle to school;
2. to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and
3. to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.[3]

From 2005-2009, Virginia is expected to receive over $13 million in Safe Routes to School funding. Between 70 and 90 percent of the funds will be allocated to Safety Improvement Project Grants. These Project Grants have a $500,000 maximum per application, but must be submitted under a formal SRTS Program as established by the County, School Board or both.

Funding

Transportation Enhancement Program

The Transportation Enhancement program is a reimbursement program where expenses must be incurred and documented by the project sponsor before funds can be released by VDOT. Through this program, up to a maximum 80 percent of the eligible project costs can be reimbursed with federal funds. A minimum 20 percent match must come from other public or private sources.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

This program seeks to improve air quality and is restricted to projects that are expected to reduce transportation-related emissions in areas that do not meet National Ambient Air Quality Standards.21 Northern Virginia projects do qualify for CMAQ funding. CMAQ projects are diverse and include, but are not limited to, (1) encouraging motorists to use alternative forms of transportation (e.g. transit improvements such as new express bus service or bicycle/pedestrian improvements).

A complete list of funding sources is available in the report, "Alternative Transportation Funding Sources Available to Virginia Localities."

Regional/Local

Many current and new funding sources exist for pedestrian and bicycle projects, including the newly created Northern Virginia Transportation Authority and local projects such as those identified in the City of Alexandria "Capital Improvement Program." Two of the primary funding sources are outlined below:

Northern Virginia Transportation Authority

The Northern Virginia Transportation Authority was created by the Virginia General Assembly on July 1, 2002, to offer a common voice for Northern Virginia on the transportation issues and options that confront us. The Authority is charged with developing a regional transportation plan, working with Northern Virginia's communities to develop regional priorities and policies to improve air quality, and serving as an advocate for the transportation needs of Northern Virginia before the state and federal governments. On April 4, 2007, the Virginia General Assembly accepted Governor Kaine's Substitute for House Bill 3202 which provides for transportation and land use funding and reform through the NVTA. Many pedestrian and bicycle projects are identified in the NVTA regional transportation plan, Trans Action 2030. This plan and more information about the NVTA are available at: http://www.novaregion.org/novatrans.

City of Alexandria

The City of Alexandria Capital Improvement Program (FY 2008) includes a number of projects that will add significantly to the pedestrian and bicycle infrastructure in Alexandria. Some of the CIP projects include (dollar figures are total project budgets FY 2008-2013):

- $600,000 for on-street bicycle and pedestrian safety improvements such as bicycle lanes, intersection markings and bike parking
- $937,000 for Transit Facilities Pedestrian Improvements (pedestrian and bicycle enhancements near transit stops)
- $517,000 for Safe Routes to School
- $700,000 for Sidewalk, Curb & Gutter
- $600,000 for Pedestrian & Bicycle Safety Enhancements (on-street)
- $549,932 for Bike Trails
- $500,000 for Duke Street Pedestrian Flyover to Cameron Station

In addition, the City commonly uses existing operating funding or funding identified in other Capital Improvement Program accounts to build pedestrian and bicycle projects. For instance, the City commonly uses money from its existing street maintenance and signal, signs & markings program to improve on-street pedestrian markings or add bicycle route signs.

Actions & Strategies

At its June 27, 2006 Legislative Session, the Alexandria City Council adopted a formal resolution to earn "bicycle-friendly community" status from the League of American Bicyclists by 2009. This resolution included an Action Plan for the "Spin City 2009" initiative, which is City's name for our comprehensive effort to make bicycling an integral part of daily life in Alexandria.

"Bicycle-Friendly communities are recognized as places with a high quality of life," said Alexandria Mayor William D. Euille. "The Spin City initiative will help us build complete streets and make Alexandria safe and convenient for bicyclists of all abilities."

Through 2009 and beyond, Alexandria City Council will exhibit political commitment, supportive policies, focused infrastructure investment, and broad community involvement. The Action Items below provide a framework for the "Spin City 2009" initiative, which will earn Alexandria Bicycle Friendly Community status and support the implementation of the Transportation Master Plan.

B1. Enforcement & Safety Action Items

- B1.A. Alexandria Police Department will address traffic enforcement in targeted areas to encourage bicyclists to ride using the Rules of the Road
- B1.B. Implement commuter safety programs, improve bicycle registration in 2007
- B1.C. Each year through 2009, establish bicycle safety treatments at 3-5 key intersections with high volumes of cyclists. Treatments may include "bicycle boxes" (withdrawn STOP bars with painted bicycle 'safety' areas), colored bicycle lanes in high-conflict zones and signage advising appropriate location of bicyclists

B2. Engineering Action Items

- B2.A. Each year through 2009, add 2 miles of bikeways and pilot new/innovative bicycle projects on an annual basis
  - B2.A.i. 2008: Shared bicycle/transit lane
  - B2.A.ii. 2009: Bicycle boulevard
  - B2.A.iii. 2010: Raised bicycle lane
- B2.B. Coordinate maintenance with Recreation, Parks and Cultural Activities and provide an on-line forum for notification of maintenance and safety hazards
- B2.C. Add 500 bicycle racks (including ample covered parking sites) and create a revolving fund to accommodate partial contributions to bicycle parking at focus bicycle parking areas as identified on the Bicycle Facilities Update map.

B3. Encouragement Action Items

- B3.A. Similar to its transit subsidy, the City will provide stipends for employees who bicycle or walk to work at least four times per week
- B3.B. Bikes racks will be added to all transit vehicles that operate in the City – specifically all DASH buses -- by 2009
- B3.C. City will organize and sponsor a month long promotional effort and ride series to encourage bicycling
- B3.D. A checklist-style system for AASHTO bicycle standards and City Policies will be available for use in all development site review plans

Actions & Strategies

B4. Education Action Items

B4.A. Integrate Safe Routes to School improvements with the City's existing Traffic Calming program

B4.B. Update the City Bicycle Trail and Recreation Facility Map in 2007 (and every other year afterward)

B4.C. Reformat the alternative transportation website (www.AlexRide.org) emphasize bicycling and include regular updates and feedback options for citizens

B5. Evaluation Action Items

B5.A. An annual Benchmark report will be presented to City Council with input from web-based surveys on the City's progress in: Security, Amount and Location of Parking, Bicycle Facility Location, Maintenance

Christmas decorations on Hume street in the Del Ray section of Alexandria

Endnotes

1. Note: The proportion of people bicycling to work in Alexandria is included in the Metropolitan Washington Council of Governments' "Bicycle and Pedestrian Plan for the National Capital Region" p. 2-3 and reflects data accumulated in the 2000 US Census "Commute Mode Share". In the Washington, DC area, Alexandria has the third highest level of bicycle commuters following the District of Columbia (1.2%) and Arlington (0.69%). The bicycle mode share in other U.S. cities includes: Boulder (6.89%), Cambridge, MA (3.9%), Madison, WI (3.19%) and Portland (1.76%).

2. Virginia Department f of Transportation. *Alternative Transportation Funding Sources Available to Virginia Localities,* March, 2006.

3. Virginia Department of Transportation. *Virginia Safe Routes to School Grant Application Guidelines*, FY 2006-2007.

- STREET CLASSIFICATION

- NEIGHBORHOOD PROTECTION

- SAFETY

Streets

THE CITY WILL INCREASE THE NUMBER OF PEOPLE WHO TRAVEL IN THE CITY BY MASS TRANSIT, BICYCLE OR WALKING AND BECOME LESS AUTO DEPENDENT

-City Strategic Plan 2004-2015

Introduction

The streets of Alexandria represent the largest public resource within the City. Predominately urban in nature, the City of Alexandria must capitalize on its history as a walkable urban environment, and must ensure that future plans and development serve all modes of travel in a safe, efficient and context sensitive manner. City streets serve many functions providing citizens the ability to walk down the sidewalk to grab a cup of coffee, speak with their neighbors, walk their children to school, or bicycle to work.

Traditionally, decisions about streets have focused on how to accommodate the automobile. The City is changing this focus to ensure that City streets serve everyone, whether young or old, motorist or bicyclist, walker or wheelchair user, transit user or shopkeeper. Overall, this transportation plan update addresses City streets as a shared resource—outlining actions and strategies that incorporate equal consideration of the street's travel area, pedestrian area and adjacent land uses into the transportation decision making process, with the overall goal of creating multimodal corridors that protect and enhance the character of the City and its diverse neighborhoods.

The City of Alexandria's policy regarding its street network is targeted toward providing mobility for all users and alternatives to the private automobile. Decisions regarding development and redevelopment must conform to the future transportation vision of the City, taking into consideration the following: future development and redevelopment plans should not preclude the implementation of dedicated transit lanes and focus on street improvements that improve the efficiency of traffic circulation, building access, pedestrian safety and congestion reduction; consideration will be taken to include dedicated bicycle lanes within the travelway of streets as identified in the bicycle and pedestrian facilities update maps; all improvements to roadways will include improvements to infrastructure that focus on enhancing safety and accessibility for all users, regardless of age or ability.

What's Different about this Plan for Streets?

- Focus on integrated solutions for connectivity, providing mobility and access to all modes of transportation
- Development of a comprehensive, integrated, connected network that accommodates all users
- Recognizes the need for flexibility: that all streets are different, serving differing functions, priorities and user needs
- Focus on the application and development of context sensitive solutions that guide and complement street function

This streets section of the plan specifically addresses approaches to ensuring that streets are designed to safely accommodate all modes of travel and includes a general overview of the role of neighborhood protection techniques and travel demand management in ensuring the safety of City streets and community character. In addition, it outlines a number of actions and strategies to be carried out by the City in order to successfully manage the City street system. This section completes the first step in the update of the City's street classification system.

The second component of the City's plan for streets will be the development of multimodal corridor design guidelines — this effort, to be initiated immediately upon completion of this plan, focuses on bringing together the multiple departments and disciplines that utilize and influence development within the City, including but not limited to Transportation & Environmental Services and Planning and Zoning. Collectively, the City will develop corridor design guidelines that comprehensively address the interface of transportation and land use and focus on context sensitive designs, accessibility and complete streets. This will be developed as the City's "Complete Streets" policy and will guide the decision making process for future development and redevelopment.

Collectively these two components of the City Street Classification System will focus on the ability of streets to safely accommodate all modes of travel with a focus on the following four key elements:

- Emphasis on reducing the size of larger blocks through the redevelopment site planning process
- Focus on creation of a street-grid where possible that reduces the traffic load on arterial streets, resulting in reduced travel distances to destinations, reduced vehicle miles and creating more direct access to services.
- Focus on locating building vehicular access points for new development and redevelopment on side street frontage or alleys where feasible.
- The application of traffic calming and street redesign to address cut-through traffic concerns.

Street Classification

Functional classification has commonly been mistaken as a determinate for traffic volume, road size, urban design, land use and various other features. These elements represent the form of a roadway but not its function. Function is best defined by connectivity (Movement from point A to point B), without connectivity, neither mobility nor access can be served. Roadways that provide the greatest reach of connectivity are the highest level facilities. The functional classification system of the past did not necessarily reflect the function of roadways, and in many cases focused on measures such as traffic, volume, width and speed.

All streets within a City's transportation network serve a particular function. These functions can vary from providing access to a person's home to providing residents the ease of accessibility in traveling outside the City to reach their destination. The functional classification is important for the City to qualify for state and federal transportation funds.

There are five categories of functional classification that are generally recognized by the Federal Highway Administration (FHWA) and the Virginia Department of Transportation (VDOT). The City of Alexandria adopted a classification system that is slightly different, but its characteristics are generally the same. The classifications of the City of Alexandria's streets are defined on the following page.

Street Classification

Controlled Access Facilities *(FHWA General Classification)* **- Expressway** *(City of Alexandria)*

Controlled access facilities and expressways are intended to complement the arterial street system by providing for movement of very high volumes of people and goods over long distances, typically trips of three miles or more. Expressways do not provide direct access to adjacent properties. They form a closed continuous transportation system between principal traffic generators and attractors. Expressways connect with crossings of major geographical barriers. The interstate system, freeways, expressways, and parkways are classified as controlled access facilities or, in Alexandria's classification as expressways. Examples of this type of facility include I-395 (Shirley Highway), I-95 (Capital Beltway), and the George Washington Memorial Parkway (north of Slater's Lane).

Primary Arterial - Arterials

Arterials serve the main travel corridors by connecting secondary traffic generators and mixed uses such as regional commercial, residential and employment centers with other high level street resources. Arterials provide access to adjacent properties and have limited preference at signals.

Arterials serve as the primary links to the City's portals (interchanges, Metro Stations, Smart Stations and major routes crossing City boundaries) and are intended to provide those who work or live within and visit Alexandria with general mobility and access to the greater Washington Metropolitan Area. Access is provided to adjacent land on a limited basis; however, most traffic is limited to through movements, particularly during the peak hours. Preferential signalization, signal progression, and linear continuity are essential for these streets. Arterials may provide dedicated transit lanes, providing for the efficient and congestion free movement of transit services within dedicated transit lanes. Examples of arterials include Duke Street (Virginia Route 236 from western City limits to Henry Street), King Street (Virginia Route 7), Quaker Lane, Seminary Road, U.S. Route 1 through the City (Jefferson Davis Highway, Patrick Street, and Henry Street), Eisenhower Avenues, Van Dorn Street, and Washington Street (Slater's Lane to I-95).

Secondary Arterial - Primary Collectors

Primary Collectors serve less concentrated areas such as neighborhood shopping centers, mixed use hubs, high schools. Primary collectors usually carry a mix of local and travel and visitor/tourist related travel and link arterials with other facilities. These roadways serve the function of intra-city movement of people via automobile, transit connector services such as DASH, bicycle and by foot. Primary collectors may provide some local traffic with property access, provide access to adjacent properties.

Examples of local primary collectors include Braddock Road (from Beauregard Street to Commonwealth Avenue), Commonwealth Avenue (from King Street to Reed Avenue), and East and West Glebe Road.

Collector Street - Residential Collectors

Residential Collectors provide direct service to residential areas, local parks, neighborhoods, businesses and schools by distributing traffic to and from local streets and routing it to higher classified facilities. Trips are relatively short with a lower percentage of non-residential trips.

Examples of residential collector streets include Cameron Street (from St. Asaph Street to King Street), Prince Street (from Reinekers Lane to St. Asaph Street), Russell Road (from West Glebe Road to King Street), Chambliss Street, Sanger Avenue, Taney Avenue (From Van Dorn Street to N. Jordan Street), and Old Dominion Boulevard.

Local or Residential Street - Local Street

The primary purpose of local streets is to provide direct access to individual homes, mixed use shopping and businesses areas, and similar traffic destinations that do not have direct access from higher classified facilities. Local streets provide access to each parcel of land either directly or through alleys, providing access for productive use of property. Local traffic should be encouraged while cut through traffic should be limited and discouraged. These streets connect local properties to collector streets and, in turn, to higher classified facilities.

Neighborhood Protection

There are several interrelated components of neighborhood protection that play a critical role in preserving neighborhood character and increasing the safety of City streets. These factors include wayfinding, streetscaping, traffic calming, access management, intelligent transportation systems (ITS) and signalization.

Wayfinding & Streetscaping

Wayfinding can be defined as how people understand and find their way through an environment[2]. The City of Alexandria's pattern of streets, buildings, transportation facilities, parking areas, attractions and amenities must be clearly understood by residents. There are four primary principles of wayfinding: architectural clues; lighting; sight lines and signage[3]. Each of these components play an important role in how Alexandrians, tourists and commuters navigate through the City, thus creating or alleviating movements that may disrupt traffic flow.

The integration of successful wayfinding and streetscaping policies and programs into the development process is a key practice involved in creating a liveable community that is safe and promotes healthy, active lifestyles through sustainable transportation alternatives. Amenities such as street furniture, trash receptacles, street trees and other landscaping help contribute to a pleasing environment. In addition to providing an attractive experience for pedestrians the appropriate use of landscaping in medians and at curbside can contribute to a decrease in traffic speeds along certain streets. Streetscape features serve pedestrian and outdoor activities, as well as provide lighting and signs for motor vehicle drivers. Streetscape features are the elements that furnish the street environment and enhance community livability[4].

Traffic Calming

A primary concern, expressed by many Alexandria residents, is the impact of vehicular traffic on their neighborhoods. Commuters without an Alexandria destination should be encouraged to use the freeways or transit. They should be discouraged from traveling on local streets that traverse neighborhoods. According to the 1992 Plan, the City has taken this position as a stated policy. In many areas of Alexandria, measures have been instituted to discourage or prohibit through-traffic from using streets that connect between arterials. Implementation of these measures must be continued as a coordinated effort between City staff and the neighborhoods affected by commuter traffic.

The City of Alexandria's Neighborhood Traffic Calming Program (NTCP) incorporates education, enforcement and engineered street design into protecting the quality of life in City neighborhoods. The City has developed the NTCP to provide residents with the opportunity to raise neighborhood traffic concerns and to participate in the selection of strategies that promote safe and pleasant conditions for residents, pedestrians, bicyclists and motorists in City neighborhoods.

A variety of traffic calming measures can be used to slow traffic and make streets safer for pedestrians and bicyclists including speed cushions, bulb-outs, chicanes and bike lanes. A list of traffic calming measures that the City uses as part of its NTCP is included in the Appendix.

Neighborhood Protection

Goals of the Neighborhood Traffic Calming Program

1. Provide protection to residential neighborhoods from traffic operating at excessive speeds and excessive volumes of traffic.
2. Keep neighborhood street use, to the greatest extent possible, within the classification defined in the transportation chapter of the Master Plan (i.e. local streets, residential collectors, primary collectors).
3. Increase access, safety, comfort and convenience for pedestrians and bicyclists by changing the culture of neighborhood street use from "cars first" to "people first."
4. Base the expenditure of public resources on need.
5. Foster a collaborative working relationship between the City staff and neighborhood residents in the development of traffic calming measures.

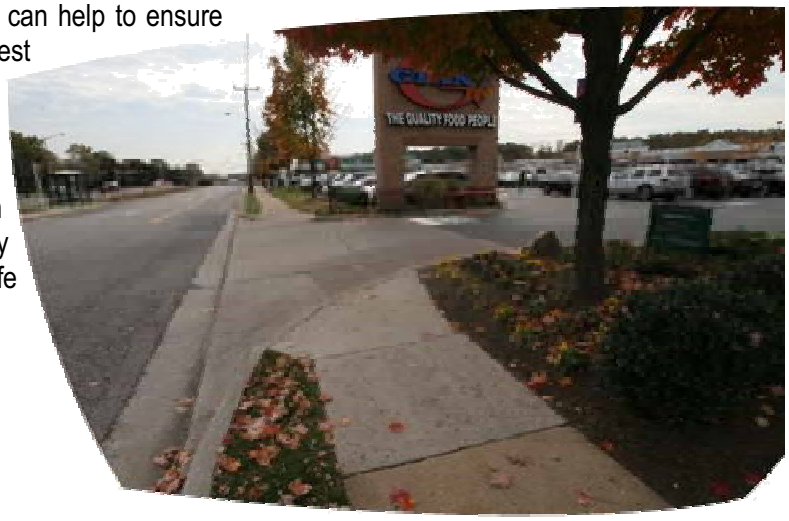
Access Management

Access management is defined as the control of driveways and intersections to maintain safety at a roadway's full traffic carrying capacity. An effective access management program will encourage smooth and safe traffic flow on the City's arterial and collector roadways and will help the City avoid some of the traffic problems caused by uncontrolled strip development.

Access design characteristics that directly impact roadway traffic flow and safety include location and design of access drives and side roads as well as location of signals, medians, and turn lanes. Effective access management includes a comprehensive package of both physical design plans for improving roadway function and local planning programs and development regulations to control access by future development onto a roadway system.

The benefits of utilizing access management in preserving and enhancing a roadway system are threefold:

1. Access management supports a safe and effective relationship between the local transportation system and land use. It can ensure that traffic can reach local development smoothly and safely and that traffic generated by local development can be accommodated on the roadway without exacerbating congestion and/or crashes. In this manner, effective access management can reduce the need for roadway widening and other costly upgrades.
2. Access management often promotes the goals and objectives of a local plan of development for the future of a community. Those related goals generally include supporting desired future development patterns with appropriate infrastructure and enhancing the streetscape. For example, where the plan of development calls for more retail business in specific locations, an access management plan can help to ensure that roads and future driveways are planned to best accommodate the increased traffic.
3. Access management helps maintain the safety and capacity of arterial and collector roadways In this way it can also minimize conflicts between pedestrian, bicycles and motor vehicles by consolidating access to land at points where safe crossings can be provided.



Travel Demand Management

Signalization and Intelligent Transportation Systems (ITS)

The City of Alexandria has a modern traffic signal system that is used to control traffic on the City's streets. Traffic signals provide safety at intersections by determining who has the right-of-way. They facilitate orderly traffic flow, allow pedestrians to cross, an provide cross-street traffic a chance to cross or enter an intersection. The installation of traffic signals can increase the capacity of the street network and reduce many types of collisions. Most signals in the City are connected to a central computer that coordinates and optimizes traffic flow to improve the efficiency of the street network.

Intelligent Transportation Systems (ITS) is the collective term for a variety of advanced technologies intended to aid travel, enhance the capacity and efficiency of the highway system, improve safety, and assist in the active management of facilities and traffic. ITS can provide real-time traffic information to motorists and emergency services, informing motorists about the best route to travel, and allowing emergency services to remove incidents quickly.

The option for adding road capacity in the form of additional lanes or roadways is very limited within the City of Alexandria. Therefore, the use of ITS strategies will allow the City to make most efficient use of its existing road system in accordance with the priority to serve Alexandria destinations in preference to through traffic. The elements of ITS may include:

- Wireless technology;
- Sensors to provide information on average traffic speed and volume;
- Closed-circuit cameras at major intersections to provide live video information on traffic flow;
- Variable message signs to inform motorists of incidents ahead and supply alternate route options;
- Synchronization of traffic signals;
- Direct emergency services tie-in for immediate response to incidents;
- Information sharing with transit centers about traffic flow;
- Information on parking availability and location; and
- Transit priority measures (i.e. que jumping).

Travel Demand Management

Travel Demand Management (TDM) strategies play an important role in the overall operation and planning of the street system. These strategies can complement other City efforts in minimizing total auto trips, educing the peak load of vehicles, and spreading traffic over a longer time period to ease peak period congestion. TDM strategies that will play an important role in the overall success of the City's transportation vision fall into two categories:

Employer Based Strategies

These strategies are based on individual companies instituting programs designed to move people from single occupant vehicles (SOV) into carpools / high occupancy vehicles (HOV) and/or public transit. Companies will implement these programs either voluntarily (they realize some internal benefit) or because a government entity has mandated that SOV usage must be reduced. Generally, the effectiveness of employer based programs is directly related to the strictness of a government mandate. Examples of TDM employer based strategies are:

- Company based rideshare program
- Company based vanpool program
- Transit fare subsidy program
- Preferential parking for rideshare participants
- Parking cost increases/subsidies based on vehicle occupancy
- Variable work hours (flex time, alternate work weeks, etc.)
- Telecommuting

The effectiveness of a TDM program is measured in terms of peak hour vehicle trips reduced. For employer based programs, this can range from around 0.5% (voluntary, modest rideshare program) to over 30% for a highly aggressive, mandated program that includes a superior rideshare and/or vanpool program, financial incentives and disincentives and variable work hours.

It should be noted that some employer-based strategies and transportation services (shuttles, etc.) have different impacts depending on the type of employment in a study area. Rideshare programs work better where many employees have the same work schedule. A variable work hours strategy is more effective in an office setting where people can follow more independent work schedules.

Areawide Strategies

These strategies are based on government entities implementing changes designed to encourage people to use carpools or public transit. Examples of areawide strategies are:

- Transit service improvements
- Transit fare reductions
- Parking cost increases
- HOV Lane Implementation

HOV Lane Implementation

As an areawide TDM strategy that is quite common in the Northern Virginia Region the implementation of additional or expanded HOV lanes is a strategy that must be explored closely for the City of Alexandria. HOV priority refers to strategies that give priority to High Occupant Vehicles, including transit buses, vanpools and carpools. HOV priority is a major component of many regional TDM programs. Two, three or four occupants may be required to be considered an HOV, depending on circumstances. HOV priority provides travel time savings, operating cost savings and increased travel reliability. HOV lanes typically provide time savings from 0-5 minutes per mile on arterial streets[5]. A study by Ewing sited in the Victoria Transportation Policy Institute's TDM Encyclopedia estimated that HOV facilities can reduce peak-period vehicle trips on individual facilities by 2-10 percent.

Funding

The City of Alexandria does not propose the construction of any new streets with the adoption of this Transportation Plan. Any new street connections required from new or redevelopment activities will be paid for by developers. Therefore, costs associated with City streets are limited to maintenance and repair. The Street Maintenance Section is responsible for repairing all sidewalks, curbs and gutters, pavement areas in the public right of way. In addition this Section is responsible for snow removal, pothole patching, guardrail, fence and barrier repairs, as well as bike path and trail repairs on request. The Street Maintenance Section places and programs variable message boards as part of the traffic management and control associated with it's activities, as well as for other City Departments. This Section also supports other City Departments with their construction activities.

Each year the Street Maintenance Section resurfaces approximately 60 lane miles of City streets using funds provided. Funding for this work is provided annually by the Virginia Department of Transportation based upon a formula that is derived from the total lane miles of paved roadway within the City of Alexandria. This funding also provides for concrete curb and gutter work, asphalt patching and localized repair and engineering studies. The State inspects the City streets, in conjunction with City inspectors, and directs which streets are to be repaired each year. Additional annual improvements and repairs to the City's roadways are typically funded out of the City's General Fund.

With the passage of HB 3202 on April 4, 2007, the Commonwealth of Virginia offered a number of new transportation funding initiatives at the State, regional and local levels including authority for the City to increase its motor vehicle registration fee, increase its real estate tax rate and levy commercial/residential impact fees.

Revenue sources and the allocation of funding are discussed in detail in the funding and implementation Section.

Actions & Strategies

In order to comprehensively address the City's street system and to enhance the transportation network for the City of Alexandria the City has identified the following actions and strategies to be implemented.

S1. The City will ensure that its streets safely accommodate all users

- S1.A. Evaluate and, if necessary, re-write design manuals to encompass the safety of all users
- S1.B. Keep neighborhood street use, to the greatest extent possible, within the classification defined earlier in this chapter of the Master Plan (i.e. local streets, residential collectors, primary collectors).
- S1.C. Continue funding, improving and evaluating the City's Neighborhood Traffic Calming Program.
- S1.D. Foster a proactive working relationship between City Staff and neighborhood residents in the development of traffic calming measures.

S2. The City will formally develop and adopt a "Complete Streets" Policy.

- S2.A. Increase access, safety, comfort and convenience for pedestrians and bicyclists by changing the culture of neighborhood street use from "cars first" to "people first."
- S2.B. Ensure that the entire right of way is routinely designed and operated to enable safe access for all users.
- S2.C. Develop means of data collection that provides an efficient means of tracking the success of streets serving all users.

S3. Develop new and enhance existing education programs to market and educate the public on Travel Demand Management (TDM) strategies.

S4. The City will improve mobility on the City's arterial streets through the development of a comprehensive policy for incorporating technology into all aspects of transportation infrastructure.

- S4.A. Redesign signal timings and coordination to coincide with the main flow of traffic during peak periods.
- S4.B. Install traffic response program using roadway sensors to adjust signal timings according to directional traffic flow.

S5. The City will improve safety at signalized intersections.

- S5.A. Use signal technology and sensors to reduce speeding on arterial streets.
- S5.B. Use cameras and law enforcement, and signal timing to minimize red-light running.
- S5.C. Convert all pedestrian signals to countdown signals.
- S5.D. Install signal pre-emption for emergency vehicles and transit.

S6. The City will focus on improvements that improve the natural and human environment, preservation of historic resources, and creation of more enjoyable public street spaces.

- S6.A. Incorporate attractive landscaping, pedestrian amenities and public art into all improvement projects.
- S6.B. Incorporate street trees into all improvement projects where possible.
- S6.C. Incorporate traffic calming features in street improvement projects whenever possible.

Actions & Strategies

S7. The City will develop a comprehensive design manual for City streetspace.

S7.A. Planning & Zoning, Transportation & Environmental Services and other departments will coordinate efforts to effectively link land-use and transportation planning.

S7.B. Develop multi-modal corridor design guidelines focused on preserving and enhancing the character and identity of City neighborhoods, streets and corridors.

S7.C. Develop policies to require the incorporation of pedestrian amenities to promote walking, bicycling and transit use into the planning, design and construction all development and redevelopment efforts.

S7.D. Identify policy for access management along applicable corridors to improve safety, function and appearance.

S7.E. Develop overlay corridors that will guide the integration of design elements into a system of multimodal corridors.

S8. The City will explore opportunities to enhance the use of high-occupancy vehicle (HOV) lanes as a traffic management strategy for periods of peak travel demand.

S8.A. The City will study its existing HOV travel lanes to determine if changes in their operations would improve traffic flow during peak travel periods.

S8.B. The City will evaluate opportunities for implementation of additional or expanded HOV travel lanes or reduction of existing HOV travel lanes on City streets.

Endnotes

1. Southworth, Michael & Ben-Joseph, Eran. 2003. Streets and the Shaping of Towns and Cities

2. Asheville – Wayfinding

3. University of Michigan Studio. 2002. Wayfinding: Navigating Human Space. http://www.umich.edu/ ~wayfind/ flash_home.htm

4. METRO. 2002. Creating Livable Streets: Street Design Guidelines

5. Victoria Transportation Policy Institute. 2007. TDM Encyclopedia. HOV Priority: Strategies to Improve Transit and Ridesharing Speed and Convenience. http://www.vtpi.org/tdm/tdm19.htm

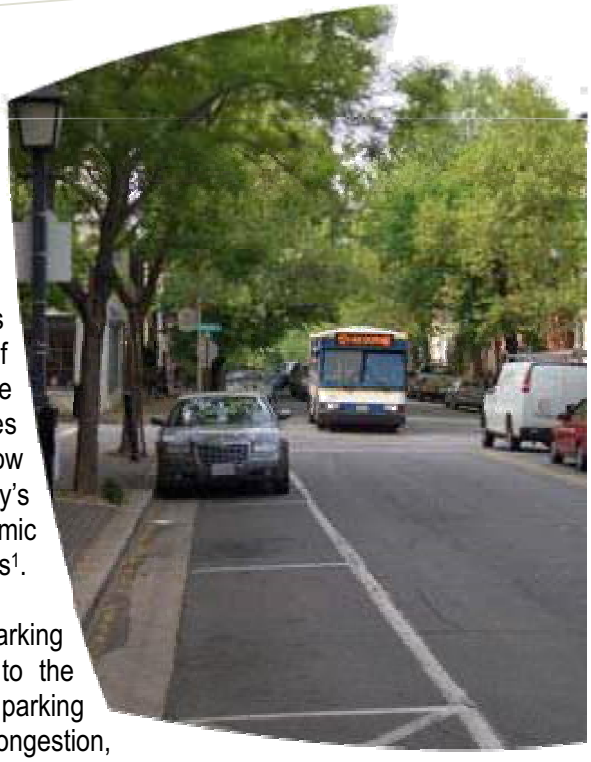
- On- & Off-Street Parking

- Pricing & Prioritization

- Parking Management

Parking

Introduction



Parking is an essential component of the City of Alexandria's transportation system. The City's parking resources consist of private and public parking garages, lots, and curbside parking. All of these resources must be managed effectively in order to provide residents and visitors with needed parking. Long- or short-term parking is part of every car trip, and parking, especially when free, is a key factor in the mode choice for a trip. The availability and price of parking influences people's housing and transportation choices about where to live and how to travel to work, shop, and conduct personal business. The City's challenge is to provide enough parking to meet mobility and economic needs, while limiting supply to encourage people to use non-auto modes[1].

A typical automobile is parked 23 hours each day, and uses several parking spaces each week, making parking availability a key contributor to the financial health of the City's commercial areas[2]. At the same time, parking management is one of the most important tools for managing congestion, increasing transit ridership and achieving the wider goals of the Transportation Master Plan[3].

This parking section of the Transportation Master Plan provides a background of the City of Alexandria's existing parking policies, identifies the guiding principles for the City in the management of parking, and identifies specific actions and strategies for the City to undertake in order to manage parking resources in a cost effective manner that contributes toward the overall vision of the City. The development and implementation of a comprehensive parking strategy will work in tandem with and serve to further the goals, actions and strategies of the City's plans for transit, streets, bicycle and pedestrian infrastructure.

Goal: A comprehensive parking management strategy that is fully integrated with the city's plans for transit, streets, bicycles and pedestrians and functions in coordination with these plans - furthering the city's overall goals and wider transportation vision.

What's Different about this Plan for Parking?

- Identifies parking and curbspace management priorities to increase parking efficiency and further the city's wider transportation vision.
- Establishes guiding principles to direct the decision-making process regarding parking policy and programs.
- Establishes a diversity of demand, cost and supply related actions and strategies to comprehensively address parking within the city.

The City currently has twelve designated residential parking districts. The districts require residents to display a residential parking permit on their vehicle to park. The annual fee for the residential parking permit is $15 for the first vehicle, $20 for the second vehicle, and $50 for each additional vehicle. The parking permit allows residents to park vehicle anywhere within the permit parking district for which it was issued, provided no other parking restrictions apply. The City code prohibits parking a vehicle in the same place for more than 72 continuous hours. The parking permit does not override this restriction.

It is important to consider the character of distinct areas within the city and what the overall goals for these areas are in order to effectively develop parking policy and programs that are context sensitive. The prioritization matrix below was developed by Arlington County — but is directly applicable to the city of Alexandria's decision making process regarding parking management.

Minimum requirements for parking throughout the City of Alexandria are established in the City's zoning ordinance. In addition, parts of the Eisenhower East plan establish maximum limits on parking. The existing minimum parking requirements for the City of Alexandria are outlined in the following table. In addition, Table 2 outlines the required number of parking spaces for retail uses within the City.

Selected Minimum Parking Requirements[4]	
One- and two- family dwellings	2 spaces per unit
Row or townhouse dwelling	2 spaces per unit
Multifamily dwellings	
-one bedroom	One and three tenths spaces per unit
-two bedroom	One and three quarters spaces per unit
-three bedroom or larger	Two and two-tenths spaces per unit
Restaurants	*One space per each four seats**

Existing Parking Requirements

For all single-family detached and two-family residential dwellings, required off-street parking facilities are required to be located on the same lot as the main building. For all multifamily dwellings, required off-street parking facilities are required to be located on the same lot as the main building lot, on a lot separated from the main building lot by an alley or directly across the street from the main building when separated by a minor local street only. For all commercial or industrial uses, the distance from the off-street parking facility to the commercial or industrial use which it serves shall not exceed 500 feet from the nearest corner of the lot containing the structure to the nearest usable portion of the lot used for parking, provided that such off-street parking facility shall be permitted on land in a commercial or industrial zone only.

Parking Spaces Required for New Retail Uses [5]

Total Floor Area in Square Feet per Floor		Required Number of Parking Spaces per Given Square Feet of Floor Area											
Not Less Than	Not More Than	Ground floor Parking Districts						Other Floors Parking Districts					
			1	2	3	4	5	6	1	2	3	4	5
--	1,500	1 per 200	1.1 per 200	1.2 per 200	1.2 per 200	1.2 per 200	1 per 200	1 per 300	1.1 per 300	1.2 per 300	1.2 per 300	1.2 per 300	1 per 300
1,500	5,000	1 per 210	1.1 per 210	1.2 per 210	1.2 per 210	1.2 per 210	1 per 210	1 per 310	1.1 per 310	1.2 per 310	1.2 per 310	1.2 per 310	1 per 310
5,000	20,000	1 per 220	1.1 per 220	1.2 per 220	1.2 per 220	1.2 per 220	1 per 220	1 per 320	1.1 per 320	1.2 per 320	1.2 per 320	1.2 per 320	1 per 320
20,000	--	1 per 230	1.1 per 230	1.2 per 230	1.2 per 230	1.2 per 230	1 per 230	1 per 330	1.1 per 330	1.2 per 330	1.2 per 330	1.2 per 330	1 per 330

Within the Old and Historic Alexandria District, access to all parking is required to be provided from an alley or interior court. Upon a finding by the planning commission or director that it is clearly not feasible to provide such access, a waiver as to part or all of any parking requirement may be granted during the site plan review process. Additional requirements for parking access apply to select districts and buildings throughout the city.

The City of Alexandria's on-street parking resources are becoming increasingly complex as new uses and services are introduced within the City. Some of the uses that compete for the City's curbspace include loading zones, bus stops, tour bus parking and taxis. With these competing uses it is imperative for the City to have clear and concise goals, objectives and strategies to guide the decision making process when it comes to parking.

The foundation of this process is the formation of the below parking management principles. The City of Alexandria has adopted the following parking management principles to guide their parking policies and programs. These principles were initially established by the Victoria Transportation Policy Institute and provide the foundation for parking policy in the City of Alexandria.

Parking Management Principles

Parking Management Principles[6]

- **User information** – Motorists should have information on their parking and travel options.
- **Sharing** – Parking facilities should serve multiple users and destinations.
- **Efficient utilization** – Parking facilities should be sized and managed so spaces are frequently occupied.
- **Flexibility** – Parking plans should accommodate uncertainty and change.
- **Prioritization** – The most desirable spaces should be managed to favor higher-priority uses.
- **Pricing** – As much as possible, users should pay directly for the parking facilities they use.
- **Peak management** – Special efforts should be made to deal with peak-demand.
- **Quality vs. quantity** – Parking facility quality should be considered as important as quantity, including aesthetics, security, accessibility and user information.
- **Comprehensive analysis** – The City will complete a comprehensive study of City parking supply, demand and parking policies.

Funding

The City of Alexandria parking program is funded through revenues generated from parking fees. Currently the City of Alexandria has approximately 1,000 metered parking spaces within the City limits. This total is estimated to increase to approximately 1,500 meters with the completion of the East Eisenhower development. These meters provide approximately $1 million in revenue to the City annually, with a projected increase to $2 million with the completion of the East Eisenhower development. The revenue generated from parking meters is required under City Code to be used for the provision of parking.

In addition to the above future development and redevelopment within the City will contribute to the provision of parking resources. However, efforts will be made by the City to limit the required number of parking spaces and provide incentives to developers for the provision of travel demand management strategies as identified in the required transportation management plan and implemented accordingly.

Actions & Strategies

P1. The City will complete a comprehensive study of City parking supply, demand and parking policies.

- P1.1. The City will identify and designate priority parking districts with common characteristics and goals and reduce the impacts of parking spillover in surrounding neighborhoods.
  - P1.1.a. The City will modify/revise parking policies based on neighborhood and community characteristics.
  - P1.1.b. The City will identify incentive and disincentive policies that encourage transit use.
- P1.2. The City will designate a Parking Authority to manage the allocation of parking spaces, management, enforcement, development of additional parking,
- P1.3. Supply/Demand Study (Include pricing, demand, policy)
- P1.4. The City will develop comprehensive guidelines for the management of on-street parking.
- P1.5 The City will identify, evaluate and adopt appropriate "best practices" for municipal parking management to more effectively manage its parking resources.

P2. The City will develop and implement comprehensive guidelines and requirements for transit-oriented development (TOD) that support the principles of TOD and include maximum parking ratios, unbundled parking infrastructure, and parking cash-out programs as parking management strategies for development/redevelopment of properties proximate to Metrorail stations.

P3. The City will ensure parking availability within the City's commercial, residential and tourist districts through the development of a comprehensive curbspace management program.

- P3.1. The City will establish a method to systematically prioritize curbspace.
  - P3.1.a. In commercial districts prioritize curb space in the following order: 1) transit stops and layover, 2) passenger and commercial vehicle loading, 3) short-term parking (time limit signs and paid parking); 4) parking for shared vehicles; and 5) vehicular capacity.
  - P3.1.b. In residential districts, prioritize curb space in the following order: 1) transit stops and layover; 2) passenger and commercial vehicle loading; 3) parking for local residents and for shared vehicles; and 4) vehicular capacity.
- P3.2. The City will designate meter rates that are based on desired occupancy rates as established by the parking study findings (P5).
- P3.3. The City will designate parking for zip cars and flex cars.
- P3.4. Create designated parking zones and spaces for car-sharing parking
- P3.5. Consider installing longer-term paid on-street parking along edges of commercial districts or in office and institutional zones to regulate curb space where short-term parking demand is low.
- P3.6. The City will explore opportunities to increase the implementation of commercial and residential shared parking.
- P3.7. Develop and promote parking management strategies that favor short-term customer parking over long-term commuter parking.

Actions & Strategies

P4. The City will implement policies to discourage the development of surface parking lots.

P4.1 The City will study the feasibility of constructing parking structures at the south, west and eastern portals located at the city boundary aimed at increasing transit ridership.

P4.2. Encourage parking cash-out and rideshare programs.

P5. The City will increase the use of information technology to provide real-time parking location and availability information.

P6. Educate the property development and management community about unbundling parking from building leases.

P7. The City will seek parking and transit solutions to minimize, if not eliminate, tour bus traffic in the residential areas of Old Town Alexandria.

P8. The City will seek parking and transit solutions to minimize, if not eliminate, tour bus traffic in the residential areas of Old Town Alexandria.

Endnotes

1. *City of Seattle Transportation Strategic Plan*. http://www.seattle.gov/transportation/tsphome.htm
2. Litman, Todd. *Parking Management: Strategies, Evaluation and Planning*. Victoria Transport Policy Institute. 2006.
3. County of Arlington, Virginia Master Transportation Plan. 2006.
4. City of Alexandria Zoning Ordinance
5. City of Alexandria Zoning Ordinance
6. Litman, Todd. *Parking Management: Strategies, Evaluation and Planning*. Victoria Transport Policy Institute. 2006.

▶ FUNDING

▶ PLANNING

▶ IMPLEMENTATION

Funding and Implementation

Introduction

Large capital investments require comprehensive financial planning in order to assure the construction, maintenance and continued operation of the envisioned investment. This City Transportation Plan identifies an innovative, ambitious vision for the City in regards to its transportation infrastructure. The Plan identifies numerous goals and objectives that will result in the need for increased revenue and funding to achieve, the largest investment being the proposed transit concept.

The Alexandria Transit Concept represents a significant undertaking and presents the most significant funding need component of this Master Plan. The transit concept can be thought of as a capital project still in its preliminary stages. This chapter explores decisions that impact the ultimate Transit Concept project cost and the funding mechanisms and implementation approach to make it a reality. Where applicable, other Master Plan elements that can be funded by similar sources and coordinated in unison with delivery of the Transit Concept project will be incorporated in the presentation of funding options.

The first section of this section details the cost estimation methodology and the resulting order of magnitude capital and operating cost estimates for the Transit Concept. Since no one source is likely to provide the entire funding for any one element of this plan, specifically the transit concept, the focus of this section is upon formulating funding "packages" of multiple options. While capital construction and vehicle acquisition costs represent the most pressing funding need of this plan, funding options that provide a continuing source of local revenue for the ongoing operation, construction and maintenance are also outlined.

Second, this section addresses the funding needs of plan initiatives as a whole providing a summary of project delivery approaches, a variety of funding options from various sources and an overview of the continued implementation and planning process required to make the elements of this plan a reality.

Cost Estimation Process

The cost estimation process divides the project into specific component categories, each with a different impact on the ultimate image and performance of the system based on the funding level provided. Various national and local indicators were utilized to developing unit costs for the major items that comprise each of these components. While these figures represent average costs, there is a great degree of variability. A comparison of different modes and assumptions has been used to provide the widest range of project scenarios. Throughout subsequent planning and engineering phases leading up to construction and operation of the system, these costs estimates will account for mode selection, design criteria and local conditions, thereby increasing accuracy through continual refinement.

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Typical Right-of-Way Costs by Mode	
Mode	Cost Range per Mile (Millions)
Bus Rapid Transit (BRT)	$0.8 - $11.0
Streetcar	$6.0 – $19.0
Light Rail Transit (LRT)	$14.0 - $31.0

Right-of-Way - Represents the cost to prepare a running surface for transit vehicles. While the Transit Concept anticipates utilizing existing roadways, surface improvements, lane markings, and access control are required for rubber-tired vehicles. For fixed-guideway rail vehicles, additional costs include track, power supply, and controls. The costs reflected here are significantly lower than costs for constructing new, purpose-built right-of-way for the exclusive use of transit vehicles.

Typical Vehicle Costs by Mode	
Mode	Cost Range (Millions)
Bus Rapid Transit (BRT)	$0.5 - $1.2
Streetcar	$1.5 – $3.5
Light Rail Transit (LRT)	$2.5 - $4.5

Vehicles - The number of vehicles required by a transit project is derived from service plans, with the total vehicle requirement accounting for running times (speed) within a corridor, frequency of service along the route, and required spares. Higher vehicle costs reflect modern technology, amenities, and propulsion systems, factors directly related to the attractiveness of the service.

Stations - This includes the design, construction and the technology incorporated into the "Smart Stations" that will be located along the routes. Final design criteria will greatly influence the project cost for station construction, but basic elements envisioned for the Transit Concept include a boarding platform, passenger information displays, and distinctive design.

Traffic Improvements - This includes smaller components, such as signal priority, vehicle location technology, and intersection redesigns that enable features such as queue-jumping (rubber-tire vehicles only).

Estimated Transit Concept Costs

Capital Costs

For each corridor illustrated in the Alexandria Transit Concept, the right-of-way type, number of stations, and sketch service plan were developed to achieve capital and operating cost estimates. The estimates reflect present-day costs, since the future start of construction and vehicle procurement dates are unknown. The following assumptions are reflected in the results of cost estimation for the Transit Concept. Any changes in these assumptions could result in significant changes in the results of project cost estimation.

The Transit Concept consists of three (3) primary corridors, Route 1, Van Dorn/Shirlington, and Duke Street, comprising a system total of 17 miles. The per-mile capital costs for various transit modes were applied, in addition to the assumptions, to derive a system-wide order of magnitude cost. The results for this project range from $115 million for a BRT system to $665 million to utilize a LRT mode (see graph below). It is important to note that individual corridors could be implemented incrementally, as funding allows, rather than constructing the project as an entire system. More advanced planning will reveal corridor-specific cost factors which may influence an appropriate sequence of implementation.

Major Transit Cost Assumptions

(1) On-street right-of-way within the existing highway profile, thus reducing impact on surrounding land-uses and resulting in minimal property acquisition costs.

(2) Maintenance facility costs are included in construction cost estimates for rail modes (Streetcar and LRT). The BRT mode is assumed to utilize the expanded DASH maintenance facility.

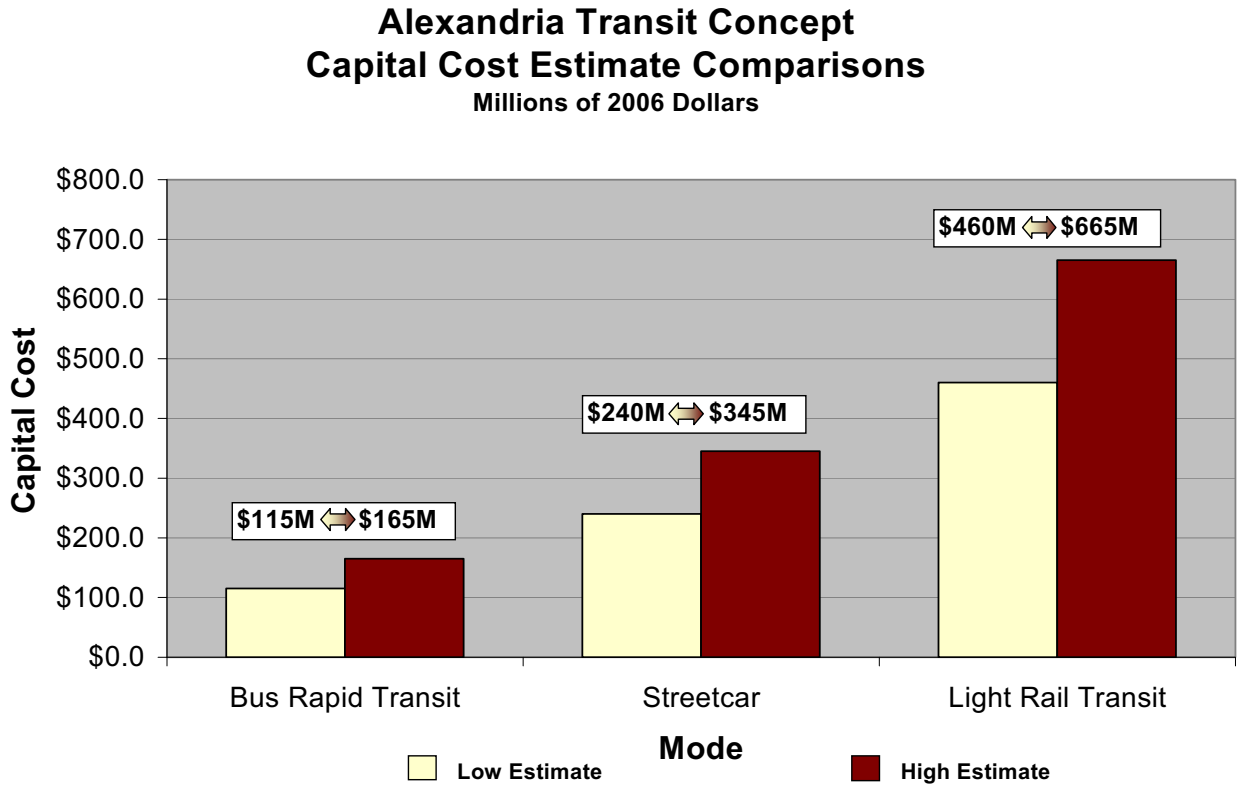
(3) Circulator vehicle costs and operations have not been incorporated. Transit Concept service will replace some existing bus service on the same route, freeing these resources for circulator service.

(4) Smart Stations will be located every ½ mile

(5) Design and Management fees will total 15% of capital costs

(6) Average speeds from 12-20mph (no express service reflected)

(7) Peak headways from 5-10 minutes, off-peak from 10-15 minutes.



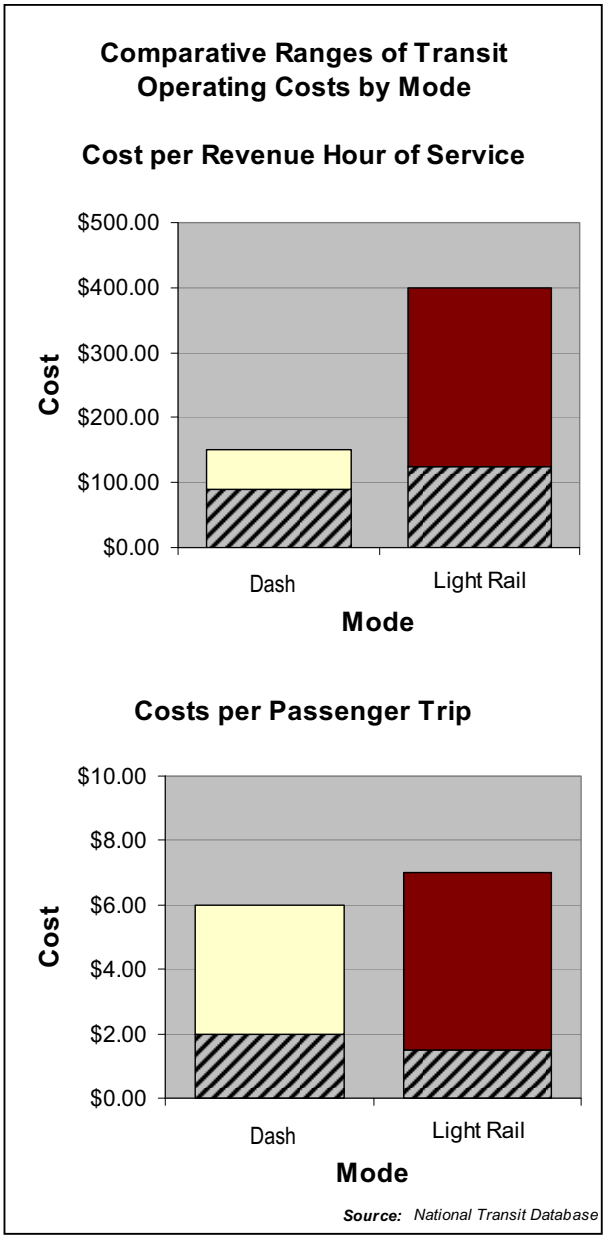
Estimated Transit Concept Costs

Operating Costs

Peer system operating costs were applied to sketch service plans for each mode to approximate the annual cost to provide service. The results indicate a funding need of approximately $16-$25 million/year based on projected revenue hours of service. Cost ranges for important cost measures of Cost Per Revenue Hour of Service and Cost per Passenger Trip are provided in the adjacent graphs. Cost data on a national basis is best reflected in Bus and Light Rail modes, as separate reporting is not yet required for Bus Rapid Transit or Streetcar service. In these graphs, revenue Hours of service reflect the costs incurred regardless of ridership, while cost per passenger trip reflect certain efficiencies gained through moving larger groups of people within single vehicles. Note that the span of these ranges reflect local conditions, labor rates, and regulations, which would be unique to Alexandria upon implementation of the Transit Concept.

It should be noted that at the conceptual stage of planning, the operating costs for such transit systems are complex to calculate, as they involve knowing the current and future vehicle speeds, the time saved from faster boarding times and other parameters. Compared to traditional bus service, the Transit Concept would likely cost more to operate. However, cost per passenger trip would likely decrease. Faster travel times allow the same number of vehicles and drivers to make more trips per day, thereby carrying a greater number of passengers, increasing revenues from passenger fares and thus decreasing overall costs. These efficiencies explain how, based on a certain ridership threshold, Light Rail can prove more efficient then BRT provided it carries vastly larger volumes of riders in fewer and larger vehicles.

Case studies, reflecting costs and funding approaches for systems representing Bus Rapid Transit, Streetcar, and Light Rail modes have been detailed in the Appendix of this report.



Calculating Funding Needs

Transportation projects are typically funded through a variety of sources. In many cases, a significant portion of the capital cost can be funded through Federal grant programs. These programs have specific eligibility requirements and often require the project to compete nationally for limited funds. Even with grant funding, local funding commitments must be secured to match grant contributions. In one such scenario, Federal Transit Administration funding could be anticipated to account for 50% of the project cost. According to the Transit Concept cost estimates, approximately $136-$196 million in other funding would be needed. This section looks at both the Federal programs available as well as various other project delivery methods to secure the needed funding to construct the Transit Concept.

Project Delivery Approach

Project delivery refers to the relationship between public and private funding partners of a transportation project, and ultimately impacts the timeline of beginning revenue service. The traditional approach assumes an approximate 50% contribution of federal funds for capital costs. In this role, only an authorized recipient of Federal funds (state or local government agency) can engage in the planning, construction, financing, and operation of the system. There are significant requirements involved with Federal funding, and some similar projects have completed analysis indicating that this pay-as-you-go approach adds several years and significant cost to the overall project.

In place of federal discretionary funds, more innovative approaches for financing involve significant local and private contributions. Often, these projects entail design-build strategies. In such a scenario, one private company provides bundled services throughout project implementation, including some private financing in return for a stake in operating profits. Various components of the Transit Concept could potentially have different project delivery approaches. Typically the system (right-of-way, vehicles) is better suited for traditional financing while development of station areas has significant potential to attract private interest and funding. The funding mechanisms available to project sponsors and local partners are outlined in the following sections.

Local/Private Funding Options

Local and Private options are also available as funding options for the Transit Concept. These options are particularly useful in enticing private development to occur along improved corridors, necessary to further support the high frequency service envisioned. Other options are better suited to defray operating subsidies, which is essential to demonstrate the long-term financial health of the sponsoring agency to be able to continue to afford to provide the envisioned service. The best suited examples to the Transit Concept include:

Business Improvement District – Added tax or fee placed on all businesses within a service district. This is often an ideal mechanism for funding incidental project costs, such as lighting, security, street cleaning, and the unique branding of an area or transportation system.

Joint Development - This opportunity exists particularly with regard to facilities that provide a logical activity center, such as a tourist information kiosk, multi-mode transfer center, or bus system transfer center. Such facilities often provide substantial traffic flow for potential businesses in the surrounding areas.

Tax Increment Public Infrastructure Fund - Used in redevelopment and improvement of specific areas. As new development increases land value, the higher tax returns are captured and set aside to help retire the debt that funded the public infrastructure improvements that enticed the new development.

Impact Fees – Represent exactions upon developers for the incremental impacts upon transit service required to service the trips generated by the facility.

Motor Vehicle Registration Fee – A modest increase in vehicle registration fees could be utilized to generate additional local funds to leverage further Federal funding.

Implementation & Plan Process

Public participation and involvement is central to all steps in the project implementation process. The role, mechanism, and information conveyed from the public varies for each step, providing critical guidance as the definition of the project evolves. This assures the public is kept abreast as the project moves along the project development and implementation process and is instrumental in shaping key details and outcomes. The methodology describing this process is detailed on the associated process chart, and outlined below:

Public Involvement
Occurs throughout process via a variety of media and methods including:

- Newsletters
- Project Website
- Open Houses
- Facilitated Meetings
- Email Notification
- News Articles

1. FORMULATION

Potential transportation and capital projects may be initiated as the result of public requests, advocacy group recommendations, city department and city council actions. During project formulation, a project may be identified at a conceptual level and corresponding policy changes, if needed, are also developed. Ideally, project formulation occurs through a comprehensive or localized planning process, thereby relating potential projects to overarching goals, funding opportunities, and long term vision. The outcome of the project formulation stage is a "Long List" of potential projects, including preliminary project details and funding needs estimates. At this point, these project lists can be classified according to various market/policy criteria, such as:

- Street
- Transit
- Bicycle/Pedestrian
- Beautification
- Parks and Recreation
- Safety

Following the creation of this pool of potential projects, they then need to be evaluated and compared to determine the most beneficial and goal-oriented projects to advance forward into the project development process.

2. SCREENING

This step brings many factors together to identify more promising projects. In order to balance multiple interests and definitions of a "promising" project, the criteria are objective and derived from multiple sources. Examples of the evaluation and screening process include:

Public Input - The public re-affirms that this project meets stated goals. Public facilitation methods can reveal those projects that are most favored by the broadest constituency.

Policy - The screening seeks to use quantifiable measures of how well a certain project meets stated policy. For example, a policy stating that the city is committed to reduction of traffic congestion would result in a project being ranked on the basis of traffic reduction potential.

Market - The ability for projects to improve conditions in local areas where issues have been previously identified through the planning process, as well as focus on a disadvantaged or underrepresented population would lead to comparison with other projects and thus rank those which have the best potential to meet these needs and serve their target market.

Constraints - Projects must be realistically practical, and this screening mechanisms takes into account cost factors, constructability, and other measures which capture the limitations on the resources of the city.

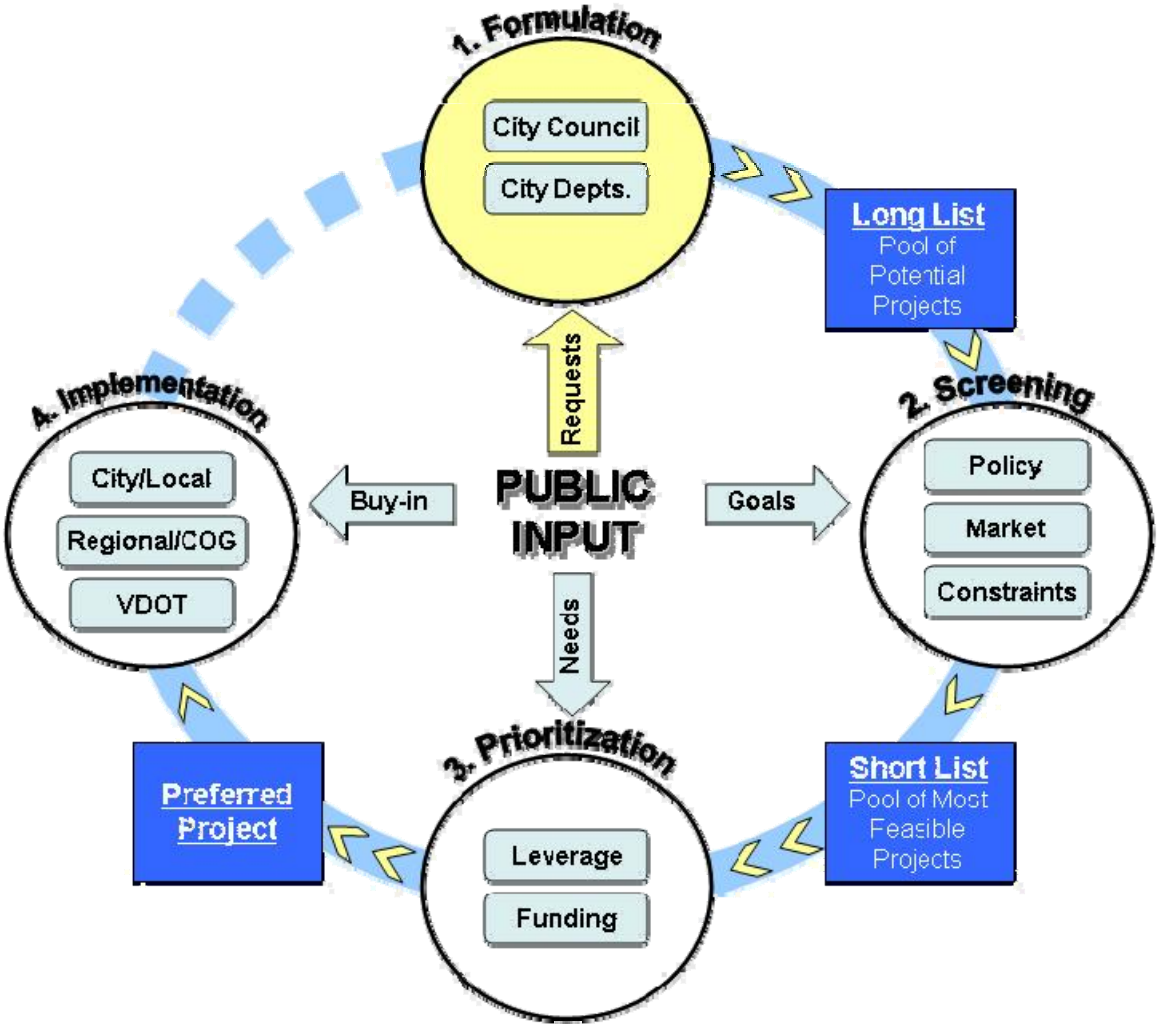
Implementation & Plan Process

3. PRIORITIZATION

This step establishes among the feasible projects a logical sequence of development. The sequence is determined by reaffirming the most pressing needs of the public and accounting for those projects that might provide the biggest benefit based on overall cost. At this point, there may also be unique opportunities, such as a grant awarded to the city, that may dictate an eligible project be prioritized to take advantage of the available funds. The result of this step is a preferred project, one that meets public desires, funding eligibility requirements, and is best integrated with existing facilities or future planning initiatives. For projects seeking federal funding support, it is often a requirement prior to award of funding to demonstrate the completion of this step.

4. IMPLEMENTATION

The final step in this process is finalizing the project delivery mechanism. This includes entering the project into local, regional, and state processes. Here, funds will be programmed, contracts awarded and construction oversight conducted. Additionally, final public and elected official buy-in on the associated costs, impacts, and benefits of the project is essential to generate momentum and commitment to champion the project and achieve a timely completion.

THE PROCESS IS CONTINUAL

The process doesn't conclude here, as projects that are implemented often derive other new projects, thus beginning the process anew. Also, any projects that did not advance past previous stages could eventually be modified or reconsidered in light of any changes in policy. In this sense, the project implementation process is constantly evolving and continual.