



Loudoun County Land Use Scenario Planning Study

Consultant Recommended Development Scenario

Summary Workbook

December 18, 2015

On October 16, 2013, the Loudoun County Board of Supervisors initiated a Silver Line/Metrorail Tax District Comprehensive Plan Amendment (CPAM) to evaluate the development potential of the Dulles Metrorail Service Districts, which were previously adopted in December 2012. The purpose of the CPAM is to evaluate the existing and planned land uses around the future Metrorail stations and ensure they strike a desired balance between 1) prompt realization of tax revenues to support future Metrorail operations, 2) maximizing future employment generation, 3) achieving a desirable land use pattern, and 4) minimizing demands on the county's transportation infrastructure.

The *Loudoun County Land Use Scenario Planning Study* provided an opportunity to contemplate alternative futures for a subset of the Dulles Metrorail Service Districts (see study area description), and measure the impacts of those decisions to evaluate the trade-offs associated with competing scenarios. Information from the scenario planning study — including the *Consultant Recommended Development Scenario* — will be combined with recommendations from the *Market Analysis and Best Practices Study for Loudoun County's Metrorail Station Areas* and considered by County staff as they complete the CPAM process.

This document summarizes the *Consultant Recommended Development Scenario* for the study area. It is organized around thirteen general headings:

- Regional Context
- Study Area Description
- Market Research & Future Trends
- Scenario Planning Process
- Partnerships for Developing the Scenarios
- General Themes for Guiding the Consultant Recommended Development Scenario
- Guiding Principles
- Priority Growth Areas
- Growth Concept Map
- Place Typology
- Key Development & Design Statements
- Supporting Infrastructure
- Performance Measures
- Conclusion

Other information prepared for the *Loudoun County Land Use Scenario Planning Study* is published as a separate technical appendix that includes documents, maps and slide presentations. Copies of this material are available from the Loudoun County Planning and Zoning Department (or via Silver Line CPAM web link at www.loudoun.gov/silverlinecpam).

Regional Context

Loudoun County, Virginia is one of several high-growth areas in the Greater Washington Metropolitan Region, located approximately 25 miles west of Washington D.C. via VA 267/Dulles Greenway or the Washington Metro Silver Line Extension (anticipated to open in 2020).

Once a rural enclave with abundant farms, eastern portions of the county began to boom after the opening of the Washington Dulles Airport in 1962 and several high-speed highways were constructed reaching back to Washington, D.C.

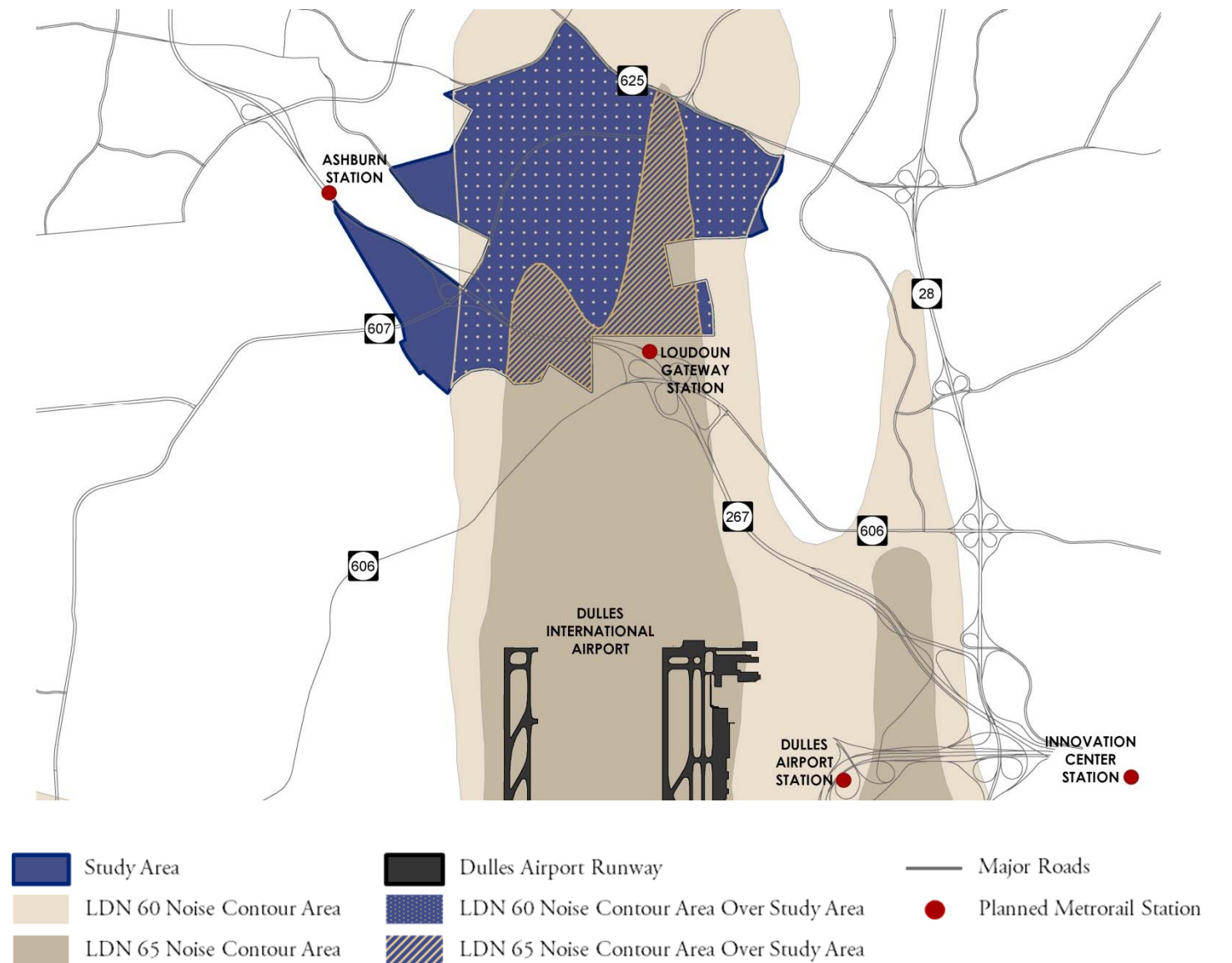
Residential neighborhoods, office parks, retail centers, and data centers were built in the area over several decades, implementing the county's vision for auto-scale, suburban activity centers within the larger rural landscape. The "attractiveness" of the area generated tremendous growth pressures, and today suburban development patterns and intensities cover nearly all areas in the eastern county.

Opening of the Washington Metro Silver Line in Loudoun County is anticipated to once again increase growth pressures to levels not yet seen before in the county. Transit-oriented development and densities influenced by stations planned at VA 606 (Loudoun Gateway Station) and VA 772 (Ashburn Station) are anticipated to consist of dense, walkable communities — continuing a trend toward this development pattern and bringing densities and intensities not previously seen in Loudoun County.

Study Area Description

The study area for the *Loudoun County Land Use Scenario Planning Study* includes 1,458 acres between the two stations, anticipated to grow because of market trends toward transit-oriented development (TOD) and increasing development pressures near Metrorail stations seen throughout the Greater Washington Metropolitan

Map 1 — Regional Context Map



Region. An area of influence for the scenario planning study (extending beyond the study area boundary) was also identified to monitor conditions for approved developments near the two Metrorail stations; including Loudoun Station, Moorefield Station, and land for an expanding data center campus between the Dulles Greenway and Shellhorn Road (Loudoun Exchange). Immediately south of the study area is land owned by Dulles International Airport.

The study area includes large, vacant parcels primarily identified for Keynote Employment Center uses in the

Loudoun County Revised General Plan (office parks, research and development parks, corporate headquarters, supporting commercial uses and open space). Data centers are found in the study area as an allowable use in the *Loudoun County Zoning Ordinance*. Airport impact overlay zones in the Zoning Ordinance extend over most of the study area and prohibit or discourage residential development.

Land surrounding the two Metrorail stations is designated for transit-oriented development (using 1/4-mile and 1/2-mile overlay zones) in the *Loudoun County*

Zoning Ordinance, which advocates for a mix of residential, retail, employment and public space within convenient walking distance at the Ashburn Station. The Loudoun Gateway Station is envisioned with no residential development due to presence of the Airport Overlay Zone (LDN 65). Required design elements for the TOD overlay zones include: small blocks, a grid street pattern, buildings at the back of sidewalk, ground floor retail, and distinctive public spaces. TOD overlay zones for both Metrorail stations extend to land in the study area.

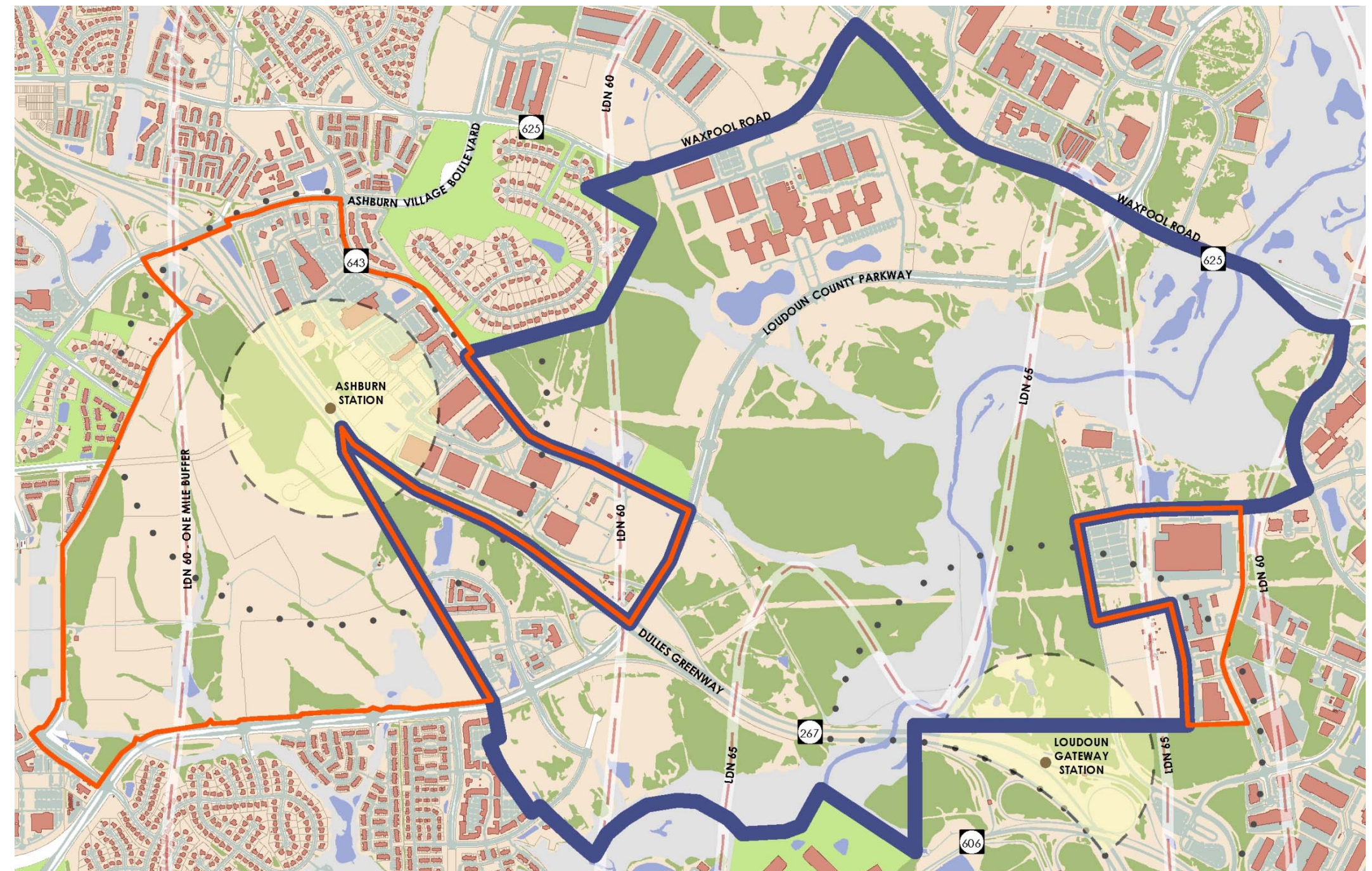
Market Research & Future Trends

The *Market Analysis and Best Practices Study for Loudoun County's Metrorail Station Areas* and the *Land Use Projections Technical Memorandum for the Loudoun County Land Use Scenario Planning Study* summarize current demographic and market real estate conditions; future market trends, targets and timing; and regional economic factors influencing the study area. Desirable development types, locations, patterns and intensities identified for the *Consultant Recommended Growth Scenario* reflect the data, findings and conclusions from the two studies.

Market conditions through 2040 do not support significant or widespread development activity for the study area if Loudoun County continues supporting low-density, single-use keynote employment. Instead, new opportunities to encourage future development and increase taxable values are tied to the extension of the Metrorail Silver Line and its connections (both real and perceived) to Tysons Corner, Arlington and Washington D.C. Development interests are building in anticipation of station openings in 2020, but it may be many years and several economic cycles before significant compact, transit-oriented development is built in the area (e.g., the Rosslyn-Ballston corridor continues to develop 35 years after the Metrorail station opened).

Urban living environments in close proximity to Metrorail service (less than one mile) will attract young families and single professionals that are more tech-savvy, socially conscious and achievement-driven than ever before. They are more flexible about their balance between wealth, work and play for achieving a high quality-of-life. They also value concepts of 'fun' and 'play' throughout their community, and want places where they can be active and in the middle of the action.

Map 2 — Study Area Map



The opportunity to link growth with quality-of-life and improve community cohesiveness and economic vitality throughout a relatively undeveloped study area is the key to its long-term success.

- | | | |
|---------------------|-------------------------------|--|
| Study Area Boundary | Streets or Parking Lots | Water Bodies |
| Area of Influence | Dulles Airport Noise Contours | Planned Metrorail Station |
| Parcels | Open Space | Metrorail Station Area Buffer (1/4-mile) |
| Building Footprints | Forested Areas | Metrorail Station Area Buffer (1/2-mile) |

Important statements from the two studies considered when preparing the *Consultant Recommended Development Scenario* include:

- New office development in the near-term will be challenging, but prospects near the two Metrorail stations will improve as areas around other Silver Line stations builds out.
- Current office leasing activity in the Greater Washington Metropolitan Region favors transit-accessible locations, with 92.3% of all regional office leasing volume in 2014 occurring within 1/2-mile of a planned or existing Metrorail station.
- New retail development will be influenced by location, and generally follow new residential or office development. Future retail development in the study area will continue moving toward town center and mixed-use environments (such as Reston Town Center).
- Residential development in Loudoun County is consistently strong and will continue to be because of the area's high quality-of-life, great schools and desirable housing choices.
- Future residential development in the study area will prefer multifamily units in more urban, mixed-use, town center style environments. This would become a new housing choice (urban multifamily attached) for residents in Loudoun County.
- Compact, mixed-use developments near Metrorail stations benefit from large anchors, but they also typically include a mix of uses to support more urban living conditions.
- The study area benefits from control of land by a few owners, which provides opportunities for phased and coordinated large-scale development and more sustainable tenant bases. This could accelerate the pace of development near Metrorail stations compared to other areas in the region.
- The study area is served by one of the world's main fiber optic trunk lines and several electricity transmission lines and substations. Data centers provide significant tax revenue to the county while minimizing impacts to supporting infrastructure and services.

Scenario Planning Process

Scenario planning offered a process, analysis tools and outreach strategy to share information and make more informed decisions about the study area's future. Participants contemplated their vision for the most livable study area, and the project team measured their impacts and evaluated the trade-offs associated with competing scenarios.

All of the development scenarios (four alternatives and the consultant recommended development scenario) themselves are fictitious stories about the future. They are not exact forecasts or predictions, but possible futures that could come to pass based on what already exists, emerging trends or the community's desire to change course for the future. The essential requirement for any of the development scenarios was that they were plausible, within the realm of what exists or what could be.

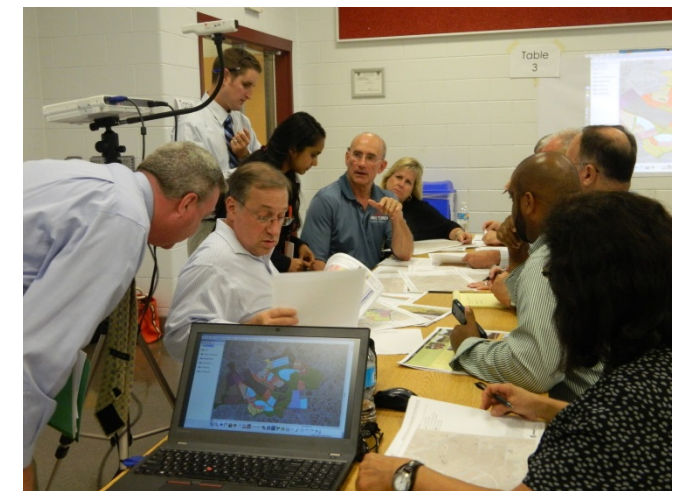
Information summarizing the alternative development scenarios contemplated for the study area and their trade-offs (performance measures) is provided in the *Loudoun County Land Use Scenario Planning Study Development Scenario Resource Book* (included in this document's technical appendix).

Partnerships for Developing the Scenarios

The project team worked with several stakeholder groups during the scenario planning process to understand challenges and opportunities facing the study area, create reliable scenario planning tools, and brainstorm viable alternative growth scenarios for consideration. Stakeholder involvement tools and activities used in the scenario planning process include: a project website, policy-maker meetings, project steering committee meetings, community workshops, individual development interest meetings, a key pad voting exercise, and on-line polling.

The scenario planning process also builds on the study and recommendations from the Urban Land Institute Technical Assistance Panel. All materials created for stakeholder involvement activities are provided in the technical appendix.

Photos from Community Workshops



General Themes for Guiding the Consultant Recommended Development Scenario

Thoughts, ideas or comments received throughout the scenario planning process led to a list of general themes considered when preparing the *Consultant Recommended Development Scenario*:

- Create places that attract seniors, young families and single professionals looking to live/work/play in one 24/7 community. Make places in the study area special, memorable and somewhere people want to return to over again.
- Focus development into compact, high-density and mixed-use activity centers where residents live above storefronts and walk to nearby destinations.
- Locate the highest densities and mix of uses near planned Metrorail stations and design them to take full advantage of access to high-quality rail transit.
- Advocate for new urban multifamily housing options throughout the study area (both owner-occupied and rental options) where buildings are four to ten plus stories tall, oriented toward a vibrant street, and visually interesting. Prohibit single-family detached housing anywhere in the study area.
- Find appropriate locations for data centers in the study area and develop performance standards related to site design, buffers and building architecture.
- Keep a significant portion of the study area green — natural areas, large tree stands, floodplains, community parks, athletic fields, etc. — and connect ‘green destinations’ using a comprehensive network of sidewalks, bicycle lanes and greenways.
- Bring community members together with a series of public spaces; including one or more town greens, amphitheaters, public plazas, pocket parks or playgrounds.
- Safeguard the local and regional transportation system against future congestion, which optimizes demand (land use) and supply (transportation) solutions for building a cost-effective system.

- Provide several mode choices (vehicle, rail, bus, bicycle or walking) to move people around the study area. Do not create a street network focused solely on moving vehicles.
- Design a street system that follows a grid pattern; especially in compact, high-density and mixed-use activity centers. Narrow street sections and reassign priority to transit, bicycle or pedestrian travel within the right-of-way. Do not forget to make intersections safe and convenient for crossing pedestrians.
- Invest in a local transit circulator service (small bus) to connect proposed mixed-use communities with the two Metrorail stations. The circulator should use a continuous loop route with short headways.
- Acknowledge the fact that more schools and other county facilities will be needed to keep pace with the location, timing and magnitude of residential development envisioned for the study area.
- Balance competing viewpoints and interests about allowing residential development in some portions of Loudoun County’s Airport Impact Overlay Zones. However, remember Dulles International Airport is an economic asset to the region and must be protected.
- Acknowledge Metrorail service as an economic development tool in the region.
- Ensure that preferred development types, location, patterns and intensities maximize tax revenues in the Dulles Metrorail Service Districts.
- Allow more flexibility in the Loudoun County’s development phasing process (triggers) to take advantage of near-term market opportunities and interim uses between economic cycles.

Guiding Principles

Guiding principles created for the study area respond to Loudoun County’s stated priorities for the Dulles Metrorail Service Districts: 1) prompt realization of tax revenues to support future Metrorail operations, 2) maximizing future employment generation, 3) achieving a desirable land use pattern, and 4) minimizing demands on the county’s transportation infrastructure. They also

Guiding principles for the Consultant Recommended Development Scenario should be the starting point for the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment:



Become a Complete Community

The study area should become a ‘complete community’ that accommodates living, working, shopping, learning, and playing in close proximity.



Ensure Long-Term Economic Well-Being

The long-term economic well-being of the study area is fundamental to its future. Encourage development types, patterns and intensities that grow tax base, create jobs and provide for fiscal sustainability.



Support Urban Development Patterns

Support urban development patterns, intensities, building types, street design and street networks in key development activity centers identified on the *Consultant Recommended Development Scenario Growth Priority Areas Map*.



Protect Dulles International Airport

Protect the long-term economic viability of Dulles International Airport by promoting airport-compatible uses and densities in the County’s Airport Impact Overlay District (inside the designated Ldn 65+ and Ldn 60 noise contour areas only — only exception could be for development within ½-mile of planned Metrorail stations).



Concentrate Development at Metrorail Stations

Encourage high-density, mixed-use, urban development within walking distance of the two planned Metrorail stations (see the ½- mile station area buffer identified on the *Consultant Recommended Growth Concept Map*). Restrict residential development to areas outside the Ldn 65+ noise contour area in the County’s Airport Impact Overlay District.



Move ‘People’ Throughout the Study Area

Develop a transportation system that safely and efficiently moves ‘people’ throughout the study area. Emphasize a grid network concept, complete street principles, minimum spacing standards, and separate suburban/urban context design treatments to help reduce traffic congestion, maximize travel mode choices, and provide several route options in the study area.



Embrace Technology Industry

Embrace the study area as a technology hub for new data centers located in strategic areas to minimize impacts to surrounding development.



Phase Long-Term Development Goals

Allow interim uses to activate sites in the study area, provide income for property owners, and generate tax revenue. Interim uses should be positioned to efficiently and easily redevelop (or convert to another use) when the market for more dense, mixed-use development improves.

consider results from the scenario planning technical analysis and input/comments received throughout the scenario planning process.

The principles provide simple statements about preferred growth and development patterns for the study area, which should remain ‘timeless’ and held constant long into the future. Patience may be needed for some of the guiding principles, as it might be 10 to 50 years before they are fully realized.

The guiding principles should not be considered independent statements. They are intended to overlap in many ways for a more desirable and sustainable community. In some cases, the principles may conflict when applied to a specific site, road alignment option, environmental issue, etc. County officials will need to prioritize their needs based on information available at the time for making a decision.

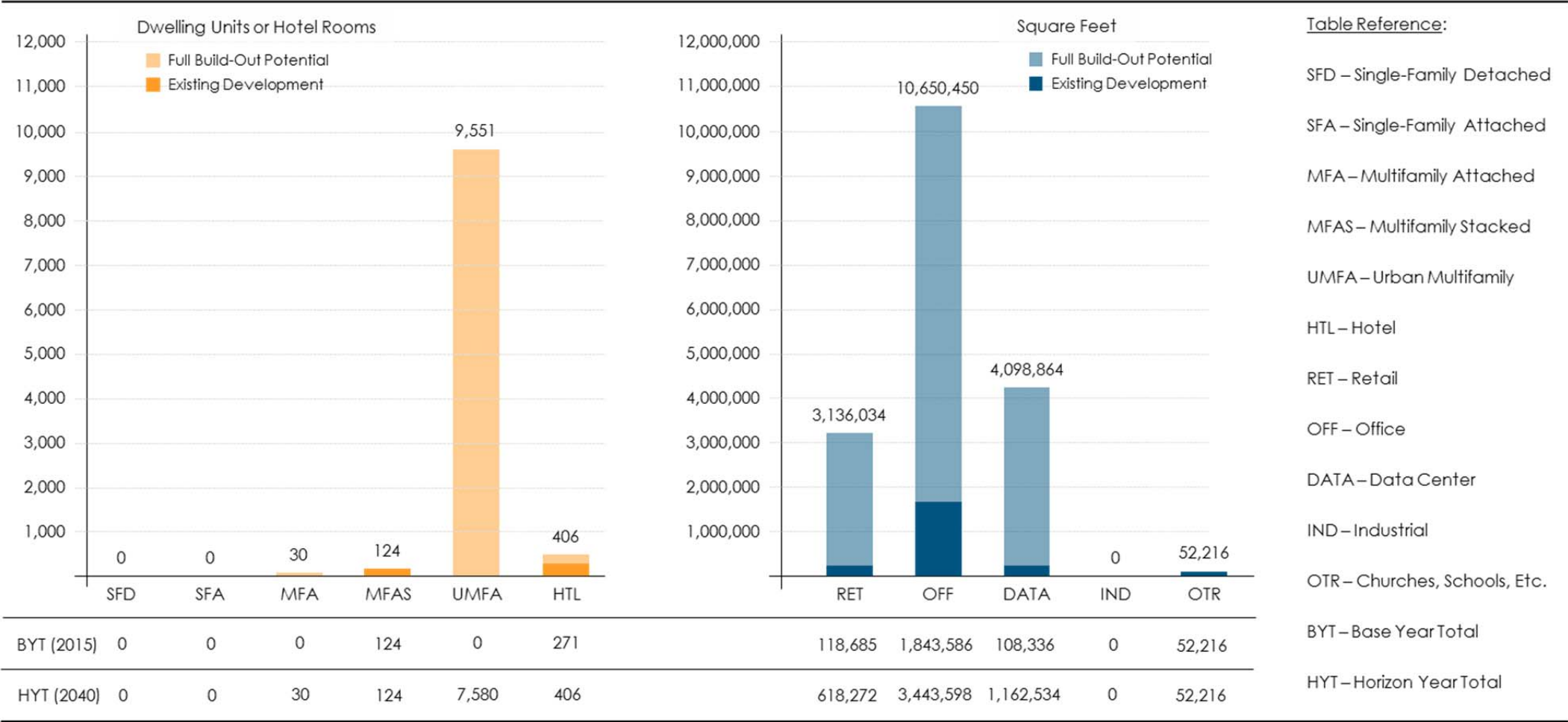
Growth Concept Map

The *Growth Concept Map for the Consultant Recommended Scenario* and supporting images on pages 6 through 9 represent preferred development types, locations, patterns and intensities for the study area. The map considers results from the two market and economic analysis studies, scenario planning technical analysis, guiding principles, and input/comments received throughout the scenario planning process. Patience may be needed for some recommendations on the map, as it might be 10 to 50 years before they are fully realized.

Place types on the *Growth Concept Map* define specific land uses, development patterns, and design characteristics desirable in the study area (as opposed to reporting only preferred land uses). More information on places types created for the Growth Concept Map is provided in the next section of the document.

Information depicted on the Growth Concept Map should be used as a guide for the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment. It should also be used for follow up amendments to the *Loudoun County Zoning Ordinance* and *Land Subdivision and Development Ordinance* (if appropriate).

Table 1 — Development Program Summary — Existing (2015), Future Year (2040) & Full Build-Out Potential



Place Typology

Conventional land use designations used in the *Loudoun County Revised General Plan* help determine the land uses preferred for a property. However, they do not provide additional guidance on the form and character of those uses. Without this detail, there is little guarantee to investors, property owners or the public about the expectations for future development. Uncertainty often translates to increased risk, challenges for building or extending new infrastructure, and reluctance by some to invest in the area. The County’s comprehensive plan amendment should specify desired land use, urban form and character for the study area.

The *Loudoun County Land Use Scenario Planning Study* introduces the concept of place types, which are used to

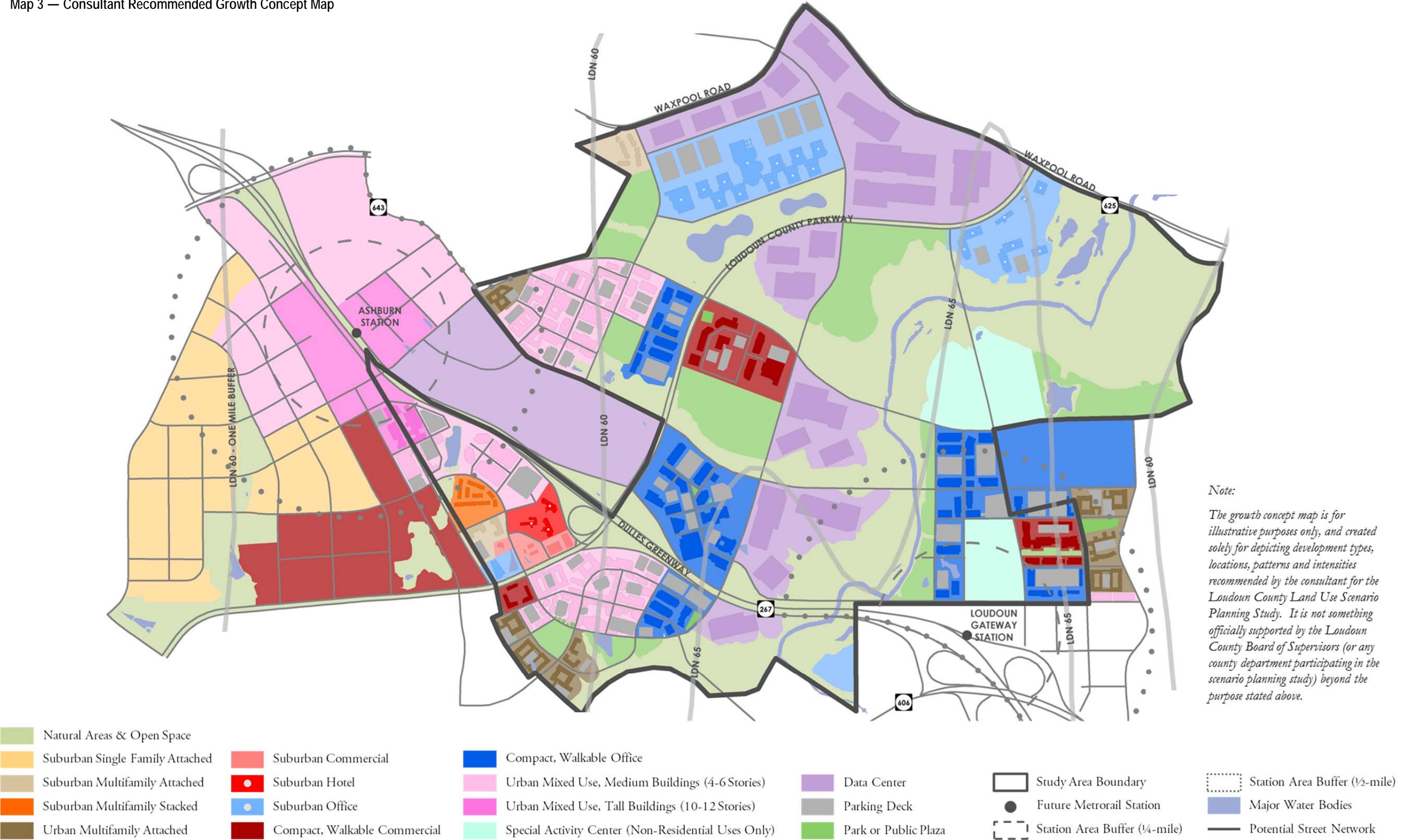
describe the interrelationship between land use and urban design for creating unique places. Generalized development characteristics used to describe different place types include: land use mix, residential density, typical home size, non-residential intensity, prevailing building height, typical block length, preferred street pattern, common open space elements, parking provisions, and preferred building orientation/ placement on a site.

Equal emphasis on land use and urban design in the place type descriptions guides decisions about growth and development, land preservation, resource protection, and the provision of community facilities and services. The place type categories and their assignment to the *Growth Concept Map for the Consultant Recommended Scenario* capture a vision for the study area that responds

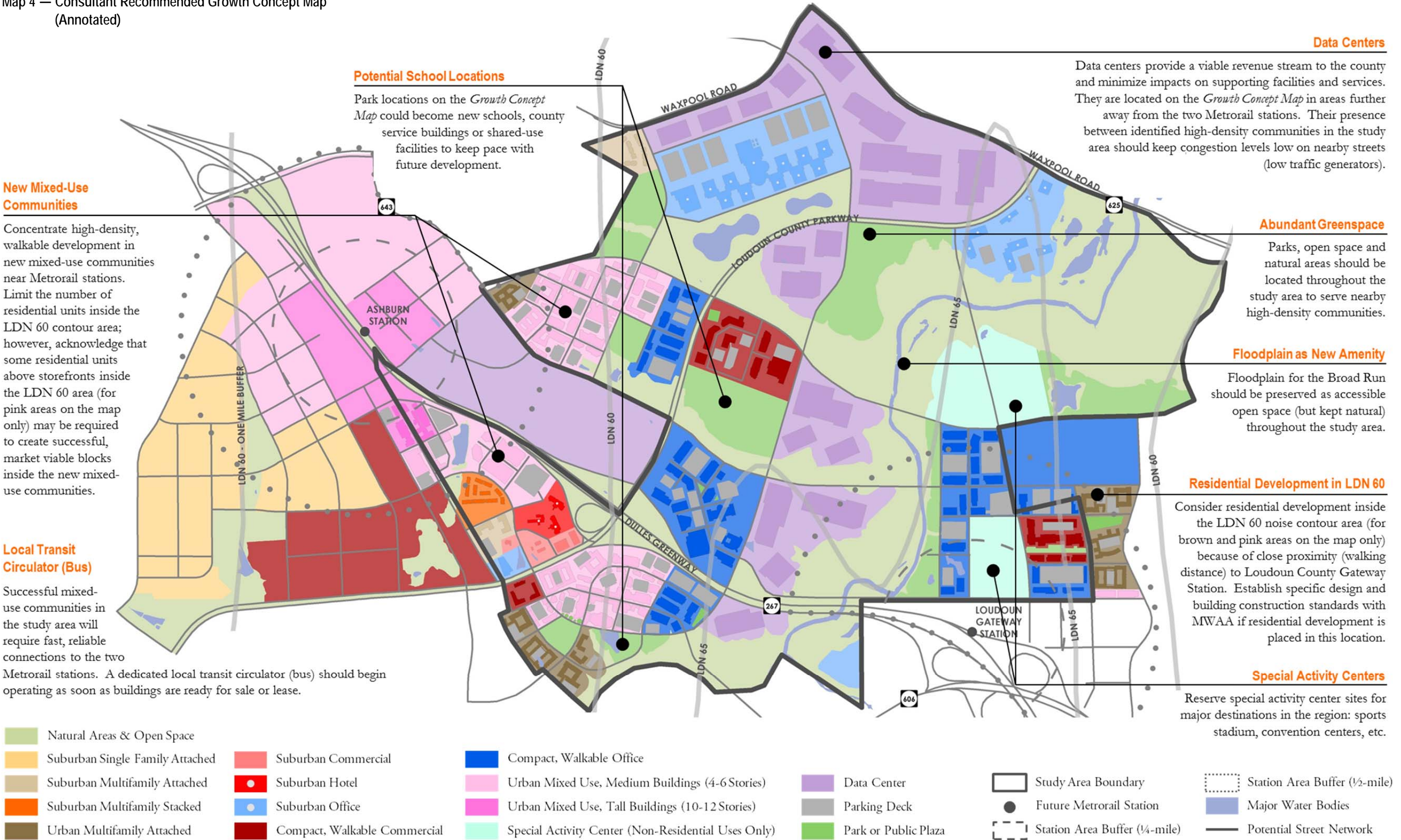
to the Board of Supervisor’s four stated priorities for the Dulles Metrorail Service Districts.

Amendments to *Loudoun County Revised General Plan*, *Loudoun County Zoning Ordinance*, and *Loudoun County Subdivision and Development Ordinance* will be necessary to implement some elements described for the different place types. Detailed descriptions for all 14 place type categories created for the study area are provided on pages 10 through 23.

Map 3 — Consultant Recommended Growth Concept Map



Map 4 — Consultant Recommended Growth Concept Map
(Annotated)



Aerial View of the Study Area (looking north) Above Dulles International Airport Runway L1:



The *Consultant Recommended Development Scenario* focuses growth into several compact activity centers (or “town centers”) with a mix of uses and densities throughout. The design and scale of development in the centers encourages urban living conditions with opportunities to live, work, shop and play in close proximity. A grid network of streets helps reduce traffic congestion, maximize travel mode choices (vehicle, rail, bus, bicycle and walking), and provide several route

options between complementary uses. Undeveloped land surrounding the activity centers is reserved for natural areas, open space, parks, greenways or county facilities. Special activity centers identified north of the Loudoun Gateway Station (specific uses to be determined, but limited to non-residential categories) will be future centerpieces and draw visitors from around the region.

Big Ideas to Support the Consultant Recommended Development Scenario:



The highest development densities and intensities in the study area (10 to 15 story buildings) should be focused closest to the two new Metrorail stations.



Mid-rise buildings (4 to 6 stories) in mixed-use, walkable communities should provide many opportunities to live, work shop and play in close proximity.



Gathering places in major activity centers should promote a variety of social events and activities; including summer concerts, children's events, talking, playing, people-watching or simply enjoying time alone in the company of others.



A local transit circulator bus should connect proposed mixed-use communities with the two Metrorail stations using a continuous loop route with short headways.



An abundance of greenspace (natural areas, floodplains, open space, forested areas, parks, etc.) should be provided throughout the study area and easily accessible from various mixed-use communities.



Greenways throughout the study area should provide safe, convenient access between nearby destinations and/or opportunities for fun and fitness in more natural areas.



The design and scale of development in a mixed-use community should encourage active living and walking with a complete network of streets nearby and a range of non-residential uses and facilities in close proximity.



Complete streets throughout the study area should support urban, walkable environments and provide multi-modal options for traveling between them.

Natural Areas, Parks & Other Open Space

Natural areas, parks and other open space include active and passive land dedicated for conservation. These areas may be undisturbed or lightly developed, and are protected from development by government policies or purchased specifically for parks, conservation or other government purposes. These areas may include: floodplains, major watersheds, permanent conservation areas, park land, trails, athletic fields, schools, community facilities or dedicated open space in other place type categories.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Natural Areas
- Neighborhood Park
- Community Park
- Regional Park

Secondary Land Uses

- School
- Community Facility
- Greenway

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix		Separated Uses
Residential Density		N/A
Typical Home Size		N/A
Non-Residential Intensity		0.10 – 0.20 FAR
Prevailing Building Height		1 – 2 Stories (30' Max)
Typical Block Length		NA
Street Pattern		NA
Open Space Elements	Buffers / Greenways / Ponds	
Transportation Choices	Auto, Walk, Bike	
Parking Provision	Surface Lot	
Building Orientation	Facing Street	
Building Placement	Setback Behind Front Yard	



Natural areas, parks and other open space protect natural areas and water features, serve as buffers between incompatible land uses, and provide areas for active recreation. Other locations may support one or more community facilities.



Suburban Single-Family Attached Neighborhood

Suburban single-family attached neighborhoods are generally formed as small communities, with a relatively uniform housing type and density throughout (sometimes referred to as townhouse communities). Typical densities in these neighborhoods range from 6.0 to 12.0 dwelling units per acre. Home sizes can range from 1,500 to 3,500 square feet. Building size and site design significantly influence household size, student generation, and need for county facilities and services. Some neighborhoods are auto-dependent with large surface parking lots. Others are more walkable with wide sidewalks, alleyways, neighborhood parks, and buildings pulled up to the street.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Townhome
- Duplex

Secondary Land Uses

- Natural Areas
- Neighborhood Park
- Clubhouse
- Pool & Amenities

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	6.0 – 12.0 du/ac
Typical Home Size	1,500 – 3,000 SF
Non-Residential Intensity	N/A
Prevailing Building Height	1 – 3 Stories (45’ Max)
Typical Block Length	NA
Street Pattern	Curvilinear or Grid
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto, Walk, Bike
Parking Provision	Private Driveways / On-Street
Building Orientation	Facing Street
Building Placement	Setback Behind Front Yard



Suburban single-family attached neighborhoods provide another housing option in the study area. Townhomes are attached on one or two sides, and units include all floors from ground-level to top story. Units may include direct access to a garage.

Suburban Multifamily Attached Neighborhood

Suburban multifamily attached neighborhoods are generally formed as complexes or communities, with a relatively uniform housing type and density throughout. They support the highest residential density in the suburban landscape, and may contain one of the following housing types: condominiums, senior housing, or apartments.

Typical densities in these neighborhoods range from 16.0 to 24.0 dwelling units per acre. Dwelling units can range in size from 800 to 1,500 square feet. Smaller homes result in lower household size, student generation, and need for county facilities and services per unit (compared to other suburban residential categories). Buildings are typically three to four stories tall. Large parking lots and limited street connectivity create an overall auto-dependent landscape. Transit service becomes more feasible for these neighborhoods as densities become higher.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Condominium
- Senior Housing
- Apartment

Secondary Land Uses

- Natural Areas
- Neighborhood Park
- Clubhouse
- Pool & Amenities

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	16.0 – 24.0 du/ac
Typical Home Size	800 – 1,500 SF
Non-Residential Intensity	N/A
Prevailing Building Height	3 – 4 Stories (60' Max)
Typical Block Length	800 – 1,500 LF
Street Pattern	Curvilinear
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto, Bus
Parking Provision	Surface Lot
Building Orientation	Facing Street
Building Placement	Setback Behind Front Yard



Suburban multifamily attached neighborhoods provide another housing option in the study area. Condominiums, senior housing or apartment units are stacked one over the other with access from an interior hallway. Shared amenities may include a club house, fitness center, pool or outdoor exercise areas. Buildings may include access to a parking deck; however, most are surrounding by surface parking lots.

Suburban Multifamily Stacked Neighborhood

Suburban multifamily stacked neighborhoods are generally formed as small communities, with a relatively uniform housing type and density throughout. Buildings look like townhomes from the outside, but they have a two story unit stacked on top of another two story unit (referred to as two-over-two format). Typical densities in these neighborhoods range from 8.0 to 16.0 dwelling units per acre. Home sizes can range from 1,500 to 2,500 square feet. Household size, student generation, and need for county facilities and services are typically lower than a suburban single-family attached neighborhood, but higher than a suburban multifamily attached neighborhood.

Some neighborhoods are auto-dependent with large surface parking lots. Others are more walkable with wide sidewalks, alleyways, neighborhood parks, and buildings pulled up to the street.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Condominium
- Apartment

Secondary Land Uses

- Natural Areas
- Neighborhood Park
- Clubhouse
- Pool & Amenities

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	8.0 – 16.0 du/ac
Typical Home Size	1,500 – 2,500 SF
Non-Residential Intensity	N/A
Prevailing Building Height	4 Stories (60' Max)
Typical Block Length	800 – 1,500 LF
Street Pattern	Curvilinear or Grid
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto, Walk, Bike
Parking Provision	Surface Lot
Building Orientation	Facing Street
Building Placement	Setback Behind Front Yard



Suburban multifamily stacked neighborhoods provide another housing option in the study area. Buildings look like taller townhomes from the outside, but they have a two story unit stacked over another two story unit. Homes are accessed from shared stairways, and may include direct access to a garage.

Urban Multifamily Attached Neighborhood

Urban multifamily attached neighborhoods support a mix of moderate- to high-density housing options. They are relatively compact, and may contain condominiums or apartments. Buildings are oriented toward the street and range in size from four to six stories. Parking is satisfied with on-street parking, structured parking, or shared rear-lot parking strategies. The design and scale of development in an urban multifamily neighborhood encourages active living and walking with a complete network of streets nearby and a range of non-residential uses and facilities in close proximity.

Typical densities in these neighborhoods range from 24.0 to 48.0 dwelling units per acre. Home sizes can range from 700 to 1,000 square feet. Household size, student generation, and need for county facilities and services are the lowest per unit for the residential place types used in the study area (urban vs. suburban prototype).

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Condominium
- Apartment

Secondary Land Uses

- Pocket Park
- Neighborhood Park
- Public Plaza
- Clubhouse
- Pool & Amenities

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	24.0 – 48.0 du/ac
Typical Home Size	700 – 1,000 SF
Non-Residential Intensity	N/A
Prevailing Building Height	4 – 6 Stories (90' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Urban multifamily attached neighborhoods offer the highest-density living option in the study area. Condominium or apartment units are stacked one over the other with access from an interior hallway. Units may have access to a parking deck, shared-use surface lot or on-street parking. Nearby amenities (with walking distance) and public gathering areas provide opportunities to enjoy urban living.



Suburban Commercial

Suburban commercial centers serve the daily needs of surrounding suburban residential neighborhoods. They typically locate near high-volume roads and key intersections, and are designed to be accessible primarily by automobile. Buildings are set back from the road behind large surface parking lots, with little or no connectivity between adjacent businesses. Common types of suburban centers include: convenience stores, multi-tenant strip centers, big box stores, or shopping malls. Some suburban commercial centers are served by bus transit.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Convenience stores
- Multi-tenant strip centers
- Fast food restaurants
- Big box stores
- Shopping malls

Secondary Land Uses

- Professional services
- Community facilities

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.15 – 0.25 FAR
Prevailing Building Height	1 – 2 Stories (30' Max)
Typical Block Length	N/A
Street Pattern	N/A
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto, Bus
Parking Provision	Surface Lot
Building Orientation	Facing Street
Building Placement	Setback Behind Surface Lot



Suburban commercial development typically locates near high-volume roads, major intersections or interchanges. Low-profile buildings are separated by large surface parking lots. A lack of safe, convenient pedestrian facilities interior to the site limits opportunities to walk between nearby shops or restaurants.

Suburban Hotel

Suburban hotels provide short-term lodging to the general public, and may include one or more buildings surrounded by surface parking lots. They tend to locate near high-volume roads and key intersections, and are designed to be accessible primarily by automobile.

Common types of hotels include: business hotel, motel, and extended-stay hotel. Several hotels also include one or more ancillary uses such as conference centers, sit-down restaurants, or night clubs in close proximity.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Business hotel
- Motel
- Extended-stay hotel

Secondary Land Uses

- Conference center
- Sit-down restaurant
- Night club

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.30 – 0.60 FAR
Prevailing Building Height	4 – 6 Stories (90' Max)
Typical Block Length	N/A
Street Pattern	N/A
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto
Parking Provision	Surface Lot
Building Orientation	Facing Street
Building Placement	Setback Behind Front Yard



Suburban hotels typically locate near high-volume roads, major intersections or interchanges. Multi-story buildings are separated by large surface parking lots.



Suburban Office

Suburban office centers provide opportunities to concentrate employment on normal workdays. They include both large-scale isolated buildings with numerous employees as well as areas containing multiple businesses that support and serve one another. Building heights may vary, even on the same site, with typical heights ranging from 2 to 6 stories. Parking for buildings is satisfied using either surface parking lots or multi-level parking decks. They are typically buffered from surrounding development by landscaped areas and located in close proximity to major roads.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Corporate office
- Multi-tenant professional office
- Research and development

Secondary Land Uses

- Copy and printing
- Sit-down restaurant
- Bank

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.25 – 0.75 FAR
Prevailing Building Height	2 – 6 Stories (90' Max)
Typical Block Length	800 – 1,500 LF
Street Pattern	Curvilinear
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto
Parking Provision	Parking Deck / Surface Lot
Building Orientation	Facing Street
Building Placement	Setback Behind Front Yard



Suburban office development typically locates near major roads, intersections or interchanges for convenient employee access. Large buildings, parking decks or surface parking lots spread development out and leave it generally unconnected. Most trips in these areas are made by automobile.



Compact Walkable Commercial

Compact, walkable commercial centers offer residents access to nearby shopping and entertainment options within a larger neighborhood or community. The design and scale of development in these centers encourages active living with a complete and comprehensive network of walkable streets nearby. Buildings are located directly behind the sidewalk, and some uses may extend out to the street in the form of sidewalk cafes or outdoor seating areas. Parking is satisfied using on-street parking, structured parking, or shared rear-lot parking strategies.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Sit-down restaurant
- Retail sales
- Bank
- Grocery store
- Night club

Secondary Land Uses

- Movie theater
- Professional office
- Community facilities
- Neighborhood park
- Public plaza
- Outdoor seating

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Mix of Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.50 – 1.00 FAR
Prevailing Building Height	2 – 4 Stories (60' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Compact walkable commercial development promotes desirable destinations in the study area. They are denser than a suburban commercial center, and provide retail and entertainment uses attractive to the entire region. They also include one or more public spaces for a variety of social events and activities; including summer concerts, children’s events, talking, playing, people-watching, exercising or simply enjoying time alone in the company of others.

Compact Walkable Office

Compact, walkable office centers offer residents the opportunity to work near where they live within a larger neighborhood or community. The design and scale of development in these centers encourages active living with a complete and comprehensive network of walkable streets nearby. Buildings are located directly behind the sidewalk. Parking is satisfied by using on-street parking, structured parking, or shared rear-lot parking strategies

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Corporate office
- Multi-tenant professional office
- Research and development

Secondary Land Uses

- Copy and printing
- Sit-down restaurant
- Bank
- Public plaza
- Outdoor seating

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.50 – 3.00 FAR
Prevailing Building Height	3 – 6 Stories (90' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Rail, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Compact walkable office development provides an alternative to more suburban-scale development patterns. It provides opportunities to live near where people work in an urban environment, with parking decks and on-street parking promoting higher-density development. Ground floor retail may be located in one or more of the office buildings along a street.

Data Center

A data center may include one or more buildings used to store a group of networked computer servers. Large substations are usually located at each site to provide electricity. Data center buildings range between 50,000 and 300,000 square feet, and often have limited architectural detail (giving the appearance of industrial buildings). Data center campuses are often surrounded by gates for security. Small internal roads provide access to each building on the site. Given limited activity at the street level, data centers typically result in poor walkability.

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Data center

Secondary Land Uses

- Electricity sub-station

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Separated Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.10 – 0.30 FAR
Prevailing Building Height	1 – 2 Stories (30' Max)
Typical Block Length	N/A
Street Pattern	N/A
Open Space Elements	Buffers / Ponds
Transportation Choices	Auto
Parking Provision	Surface Lot
Building Orientation	Random
Building Placement	Setback Behind Front Yard



Data centers are large and surrounded by security fences. Buildings are generally blank (no windows or doors) and look like large industrial warehouses. Relatively few employees and visitors to a site make data centers low trip generators.



Urban Mixed Use Neighborhood – Medium Buildings

Urban mixed-use neighborhoods with medium buildings offer residents the ability to live, work, shop and play in one community. They include a mixture of housing types and residential densities throughout, which are integrated with various goods and services nearby to create a more walkable community. Residential units are found above storefronts. The design and scale of development encourages active living with a complete network of walkable streets. Mixed-use neighborhoods support driving, transit, bicycling and walking as viable modes of transportation. Typical densities in these neighborhoods range from 24.0 to 32.0 dwelling units per acre. Home sizes can range from 700 to 1,300 square feet. Household size, student generation, and need for county facilities and services are the lowest per unit for the residential categories used in the study area (urban vs. suburban prototype).

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Condominium
- Apartment
- Sit-down restaurant
- Retail sales
- Bank
- Grocery store
- Night club
- Multi-tenant professional office

Secondary Land Uses

- Community facilities
- Neighborhood park
- Public plaza
- Outdoor seating

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Mix of Uses
Residential Density	24.0 – 32.0 du/ac
Typical Home Size	700 – 1,300 SF
Non-Residential Intensity	0.50 – 4.00 FAR
Prevailing Building Height	4 – 6 Stories (90' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Rail, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Urban mixed-use neighborhoods (with medium buildings) support a variety of land uses and development intensities. Buildings are located close together and oriented toward a network of walkable streets. Residential units are typically found above storefronts. Other nearby amenities (with walking distance) and public gathering areas provide opportunities to enjoy urban living.

Urban Mixed Use Neighborhood – Tall Buildings

Urban mixed-use neighborhoods with tall buildings serve broader economic, entertainment, and community activities compared to mixed-use neighborhoods with medium buildings. Uses and buildings are located on small blocks with streets designed to encourage pedestrian activities. Buildings may stand ten to twelve stories tall. Residential units are found above storefronts. Parking is satisfied using on-street parking, structured parking, or shared rear-lot parking strategies. A neighborhood may be surrounded by one or more other urban land use categories to encourage active living, with a comprehensive and interconnected network of walkable streets.

Densities in these neighborhoods typically range from 32.0 to 125.0 dwelling units per acre. Home sizes can range from 700 to 1,000 square feet. Household size, student generation, and need for county facilities and services are the lowest per unit for the residential categories used in the study area (urban vs. suburban prototype).

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Condominium
- Apartment
- Sit-down restaurant
- Retail sales
- Bank
- Grocery store
- Night club
- Multi-tenant professional office

Secondary Land Uses

- Community facilities
- Neighborhood park
- Public plaza
- Outdoor seating

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Mix of Uses
Residential Density	32.0 – 125.0 du/ac
Typical Home Size	700 – 1,000 SF
Non-Residential Intensity	0.50 – 6.00 FAR
Prevailing Building Height	10 – 15 Stories (225' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Rail, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Urban mixed-use neighborhoods (with tall buildings) support a more intense version of development found in urban mixed-use neighborhoods with medium buildings. Buildings are located close together and oriented toward a network of walkable streets. Residential units are typically found above storefronts. Other nearby amenities (with walking distance) and public gathering areas provide opportunities to enjoy urban living.

Special Activity Center

Special activity centers were identified for land near the Loudoun Gateway Metrorail Station. These areas are largely within the LDN 65 noise contour for Dulles International Airport, which prohibits residential development because of excessive noise generated from airplanes. Non-residential uses appropriate for a large activity center may include one or more regional destinations, including: sports stadiums, convention centers, exhibit halls or museums, shopping malls, etc. Special needs for one or more of these uses will dictate overall site development and design decisions (to be addressed at a later time after a specific use is identified).

Land Use Considerations

Primary and secondary land uses listed for the place type represent typical development in the category. They are not meant to be an exhaustive list of all permitted or conditional uses that would be allowed in the place type.

Primary Land Uses

- Sports stadium
- Convention center
- Exhibit hall or museum
- Regional shopping mall

Secondary Land Uses

- Amphitheater
- Sit-down restaurant
- Night club
- Public plaza
- Outdoor seating

Form & Pattern

The form and pattern table inventories general development characteristics associated with the place type. Working together, these elements reinforce a sense of place and community brand important to distinguishing development in this category from others in the study area.

Land Use Mix	Mix of Uses
Residential Density	N/A
Typical Home Size	N/A
Non-Residential Intensity	0.50 – 4.00 FAR
Prevailing Building Height	2 – 6 Stories (90' Max)
Typical Block Length	400 – 800 LF
Street Pattern	Grid
Open Space Elements	Pocket Parks / Plazas
Transportation Choices	Auto, Bus, Rail, Walk, Bike
Parking Provision	Parking Deck / On-Street / Rear Surface Lot
Building Orientation	Facing Street
Building Placement	Behind Sidewalk



Special activity centers may include sports stadiums, convention centers, exhibit halls or museums, shopping malls, etc. Building architecture and site design should be unique and iconic for the larger region. Public spaces and secondary uses surrounding special activity centers can lengthen the stay for visitors.

Priority Growth Areas

Promoting growth in areas best able to develop during near-term market cycles will 1) bring public and private decision-making processes closer together, 2) leverage county resources with other public and private investment dollars, 3) manage the amount and timing of land consumed for new infrastructure consistent with future development market cycles, and 4) accelerate prompt realization of tax revenues to support the Dulles Metrorail Service Districts.

The *Loudoun County Land Use Scenario Planning Study* identifies five growth tiers for the study area (see Map 5), which should help prioritize the type, timing and location of new infrastructure projects identified for the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment:

Tier 1A – Ashburn Metrorail Station Area Buffer

Land within 1/2-mile of the Ashburn Metrorail station (see the station area buffer identified on the *Consultant Recommended Growth Scenario Concept Map*) is the most desirable location for high-density, mixed-use, transit-oriented development. It should be a high priority area for programming future year infrastructure projects that support walkable, urban development principles.

Directing a significant amount of residential, retail and office growth to Tier 1A through 2040 is consistent with recommendations from the *Market Analysis and Best Practices Study for Loudoun County’s Metrorail Station Areas* — citing expanding market presence/preference for new office, retail and residential development near Metrorail stations.

Tier 1B – Loudoun Gateway Metrorail Station Area Buffer

Land within 1/2-mile of the Loudoun Gateway Metrorail station (see the station area buffer identified on the *Consultant Recommended Growth Scenario Concept Map*) is a desirable location for high-density, non-residential, transit-oriented development (office, retail or special activity center). It should be a high priority area for programming future year infrastructure projects that support walkable, urban development principles.

Directing a significant amount of office and some retail growth to Tier 1B through 2040 is consistent with recommendations from the *Market Analysis and Best Practices Study for Loudoun County’s Metrorail Station Areas* — citing expanding market presence/preference for new office and supporting retail development near Metrorail stations.

Tier 2 – Mixed-Use Communities

New mixed-use communities close to planned Metrorail stations (typically less than one mile) are attractive places to live, work, shop and play for young professionals and other members of the ‘creative class’ searching for a more urban environment. They complement higher-density development activities in Tiers 1A and 1B, providing more housing choices (in terms of product type and product price) and more dwelling units overall near Metrorail stations to support walkable retail and office uses. These areas should be a high priority for programming future year infrastructure projects that support walkable, urban development principles.

Directing some residential, retail and office growth to Tier 2 through 2040 is consistent with recommendations from the *Land Use Projections Technical Memorandum for the Loudoun County Land Use Scenario Planning Study* — identifying the need for a new urban, multifamily housing product in a mixed-use (retail and office) environment — and the *Market Analysis and Best Practices Study for Loudoun County’s Metrorail Station Areas* — citing existing market presence/preference for mixed use development surrounding the study area.

Tier 3 – Non-Residential, Mixed-Use Activity Areas

Non-residential, mixed-use activity areas located further away from planned Metrorail stations support large, master-planned retail, office or special activity centers. Residential uses are not included in regional activity centers because they are located in one of the County’s airport impact overlay zones (typically the area between Ldn 60 and 65).

Directing very little retail or office growth to Tier 3 through 2040 is consistent with recommendations from the *Land Use Projections Technical Memorandum for the Loudoun County Land Use Scenario Planning Study* — citing low market demand, location preference, interests in

mixed-use development, and alternative single-use sites available outside of the study area. Regional activity centers should be a low priority for programming future year infrastructure projects with public funding.

Tier 4 – Supporting Suburban Development

Suburban areas support low-density, single-use development patterns with sites generally isolated from one another. These areas should be a low priority for programming future year infrastructure projects with the exception of new or expanded streets that connect activity centers in Tiers 1A, 1B or 2.

New data centers anticipated through 2040 should be directed to Tier 4 areas.

Ultimately, new infrastructure will be built in the study area for many reasons, including timing, partnerships, community input, available funding and economic development. Growth tiers help manage county expenditures, maximize return on investment and leverage county investment dollars with other sources. No growth tier described in this document should prohibit development for any portion of the study area; especially if it promotes economic development opportunities that might bring new (or expanding) major employers to Loudoun County.

Key Development & Design Statements

The following key development and design statements support implementation of the *Growth Concept Map* prepared for the study area. New development or redevelopment should incorporate these principles to better link growth and quality-of-life and improve community cohesiveness and economic vitality. Officials for Loudoun County will need to implement one or more of these development principles through revisions to the *Loudoun County Revised General Plan* or other supporting policies and ordinances.

Concentrate Development in Mixed-Use Communities

The *Consultant Recommended Development Scenario* advocates for multiple high-density, mixed-use communities near the two Metrorail stations. They should be places where people can live, work, shop and play. Several communities located near one another — connected via

local bus circulator, bicycle lanes or sidewalks — provide additional opportunities to meet daily needs inside the study area without a vehicle. Metrorail service for longer trips connects residents, employees or visitors to destinations throughout the Greater Washington Metropolitan Region via rail transit.

New Urban Multifamily Housing Product

Housing markets in the Greater Washington Metropolitan Region are shifting near Metrorail stations. New residents want more compact, mixed-use and multi-housing type environments and are willing to ‘live smaller’ to get it. These neighborhoods are less car-dependent and promote more active living choices — walking, bicycling or transit — for seniors, families and single professionals alike.

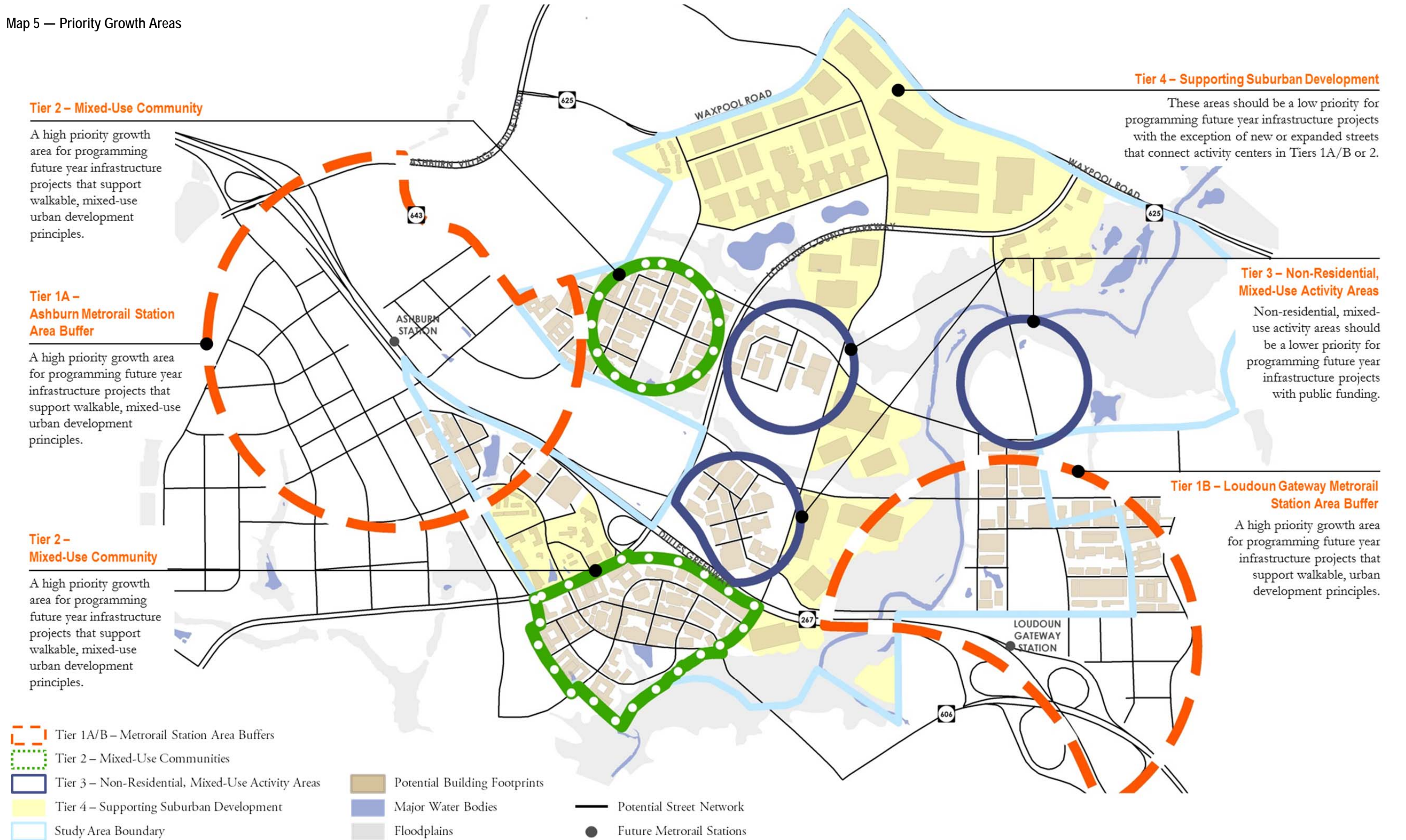
The *Consultant Recommended Development Scenario* introduces a new urban, multifamily attached product (home size generally between 700 – 1,000 square feet) for the study area. Household size, student generation, trip generation and demand for other county facilities and services are typically lower per unit than any other housing choices currently in Loudoun County. These units are similar in type, size and design to new housing development observed around existing Metrorail stations in the region (e.g., Rosslyn, Wiehle-Reston or Silver Spring). See page 14 in the document for more information about new urban multifamily attached housing units recommended for the study area.

More traditional housing types in Loudoun County — suburban single family detached, suburban single family attached, suburban multifamily attached and suburban multifamily stacked — should be minimized in the study area to take advantage of proximity to Metrorail service and minimize impacts to supporting county facilities and services.

Protect the Long-Term Economic Viability of Dulles International Airport

Dulles International Airport is an economic engine for the Greater Washington Metropolitan Region, and provides a competitive advantage for Loudoun County when recruiting new businesses, growing jobs for existing businesses, or increasing potential tax revenue

Map 5 — Priority Growth Areas



for the county. Protecting this asset should be a priority for land use decisions made in the study area.

The *Consultant Recommended Development Scenario* promotes airport-compatible uses and densities in the County's Airport Impact Overlay District, and therefore limits residential development in the designated Ldn 65+ and Ldn 60-65 noise contour areas with two exceptions: 1) residential development may be appropriate on some blocks inside the Ldn 60-65 noise contour area that intersect with the mixed-use community recommended north of Shellhorn Road and west of Loudoun County Parkway, and 2) residential development may be appropriate on some blocks inside the Ldn 60-65 noise contour area that intersects with the mixed-use community recommended south of the Dulles Greenway and east of Loudoun County Parkway.

In both exceptions, a significant amount of land is available in the planned communities to locate residential development outside of the Ldn 60-65 noise contour area; however, critical design features of a mixed-use community (namely residential units over storefronts) may warrant some residential units inside the Ldn 60-65 contour area.

Build Parks & Preserve Open Space

The *Consultant Recommended Development Scenario* reflects a significant increase in parks and open space (48% more contiguous acres of land) compared to the current future land use map and policies in the *Loudoun County Revised General Plan*. These areas should become gathering places for young families and single professionals, and be viable trade-offs for accepting higher densities and less private open space in residential or mixed-use living environments.

Important design elements for new parks or plazas in the study area include: group activity areas, Wi-Fi access, athletic courts and fields, trails and exercise areas, and pet-friendly areas. Preserving land in the floodplain for the Broad Run also supports more compact development principles, stresses environment stewardship, and makes the urban environment more attractive by providing quick, convenient access to nature.

Build 'Complete Streets' Throughout the Study Area

A complete street is designed and operated for safe, convenient access of all users; including vehicles, transit riders, bicyclists and pedestrians. They also support adjacent development context — whether rural, suburban or urban — and their unique land use patterns, densities and driveway connection needs. Complete streets support urban, walkable environments in the study area, and provide multi-modal options for traveling between them.

The *Consultant Recommended Development Scenario* assumes all new streets in the study area are built as complete streets. See pages 29 through 34 for recommended street cross sections and their application in the study area.

Urban Street Design Standards

More conventional street design standards emphasize the function of vehicle movement over the creation of place for a street (National Association of City Transportation Officials, *Urban Street Design Guide*, 2012). Growing trends toward more urban, walkable and mixed-use



Parks, plazas or natural areas in or near proposed activity centers should promote a variety of social events and activities; including summer concerts, children's events, talking, playing, people-watching, exercising or simply enjoying time alone in the company of others.



development patterns necessitate a change in conventional street design standards to: balance the needs of vehicle, bus, bicycle and pedestrian within the right-of-way; reduce travel lane width; match design speed to posted speed limit; control the number, location and spacing of driveways; complement adjacent development, and design intersections for multi-modal turning/route conflicts.

Together, these changes will help move people (vs. only vehicles) and create more memorable and enjoyable places that are great for the community, great for business, and great for creating safer environments for everyone.

The *2010 Revised Countywide Transportation Plan* should be revised to include an urban condition for its Road Policies by Geographic Area. All urban street cross sections presented in this document (see pages 32 through 34) should be compared with VDOT's *Corridor Prototype Cross Sections for Place-making and Multimodal Through Corridors*, and revised, if necessary, to meet state design guidelines and standards.

Phased Development Plans

In many ways, Loudoun County's plans, policies and ordinances are achieving exactly their objective: low-density, suburban-scale development patterns and uses that are inefficient for infrastructure, and do not provide the required return on investment to avoid subsidizing county facilities and services. At the same time, market demand for some of the densities or intensities and mix of uses depicted on the *Consultant Recommended Growth Concept Map* might be 10 to 50 years away before they are fully realized (starting the clock after both Metrorail stations are open). The critical question is how the county should manage development pressures now while holding/phasing land resources (in partnership with land owners) for a more sustainable future.

It is clear the County needs tax revenue now to keep pace with capital and operating expenses in the Metrorail Tax Service Districts. There are immediate market demands for new multifamily homes, data centers, and a limited amount of retail and office space in the study area. The *Consultant Recommended Development Scenario* advocates for interim uses to activate sites in the study area, provide income for property owners, and generate

Phased Development Example — Redevelopment of a Big Box Retail Store:



Phase 1 — Initial Development:

Typical layout for a conventional big box retail store, located several hundred feet behind outparcel buildings (banks, restaurants, convenience stores, multi-tenant retail buildings, etc.) and a large surface parking lot. Open space required for the site is focused on a central green and parking drive aisle extending between the street and big box retail store. Very wide sidewalks or planting areas (up to 80 feet deep) are provided in front and on the side of the big box retail store.

tax revenue. Interim uses should be positioned to efficiently and easily redevelop (or convert to another use) when the market for more dense, mixed-use development improves. Preparing a site or block to evolve with the market will require careful planning and upfront investments by the developer; including infrastructure placement, building location and design, parking lot location and design, and long-term park or landscaped area locations. In no way should interim development types, locations or intensities be a deterrent or barrier to implementing the long-term vision for a site (which will maximize future potential revenues for Loudoun County).

A hypothetical example for transforming a big box retail store with outparcels into a mixed-use development



Phase 2 — Infill Development:

The central green and parking drive aisle are converted to a walkable street with small retail buildings located at the back of sidewalk and parking in the rear.

(residential and non-residential) is depicted in the images on pages 27 and 28. Amendments to the *Loudoun County Zoning Ordinance* and *Loudoun County Subdivision and Development Ordinance* will be necessary to implement more flexibility regarding interim uses, development triggers, etc. New requirements for a site plan with interim development identified should include text, diagrams and site design features necessary to show how specific lots or parcels will redevelop over time and not preclude implementation of the long-term vision.

Supporting Infrastructure

The information that follows summarizes how some supporting infrastructure should be organized to support implementation of the *Consultant Recommended Development Scenario Growth Concept Map*. A map and brief narrative

for each topic area identifies issues or projects important to the guiding principles and *Growth Concept Map*.

Transportation System

In recent years, there has been a movement to reduce or reverse some of the negative transportation impacts associated with low-density, single-use development patterns in the Greater Washington Metropolitan Region: increasing traffic congestion, costly expansion of infrastructure, and lost time commuting. Future year forecasts in the *Loudoun County Travel Demand Model for 2040* predict these unintended consequences will continue if changes are not made to better integrate land use, urban design and transportation decision-making processes.

Phased Development Example — Redevelopment of a Big Box Retail Store (cont.):



Phase 3 — Infill Development:

The drive aisle in front of the big box retail store is converted to a walkable street with small retail buildings located at the back of sidewalk and parking in the rear (across the street from the big box retail store).



Phase 4 — Infill Development:

Surface parking lots are converted to parking decks with buildings all around (enclosed blocks). Small buildings are added to the front and sides of the big box retail store. New buildings support a mix of uses and intensities: multifamily residential, office, retail and entertainment.



Phase 5 — Full Development Potential:

The big box retail store is demolished and replaced with two mixed-use blocks; including walkable streets, mid-rise buildings, central plazas, and parking decks. Outparcel buildings are demolished and replaced with new mixed-use buildings that are located at the back of sidewalk for all adjacent streets (full block development).

Street Network Concept

The *Consultant Recommended Growth Scenario* advocates for a transportation system that safely and efficiently moves ‘people’ throughout the study area. Equal emphasis on land use (demand), transportation (supply) and urban design (environment) should improve overall efficiency of the transportation system while promoting livability principles important to several new communities and centers identified on the *Growth Concept Map*.

Supply-side solutions for the transportation system include: a complete and integrated grid street network for major roads and local streets, complete street principles, access management standards, minimum street spacing guidelines, special intersection treatments (including grade separated intersections at some

locations), and different street design standards for suburban and urban development conditions.

Demand-side solutions for improving the transportation system focus on land use, development density and urban design principles that promote lower vehicle trip generation (internal capture), shorter travel distance, and the use of non-vehicular travel modes. Land use mix; development location, pattern and intensity; and site design elements depicted on the *Growth Concept Map* and described in the *Place Typology* section of this document should help improve overall efficiency of the transportation system by lowering demand for long-distance vehicle trips. Street design standards for urban conditions serving new walkable communities or centers in the study area will also bind together land use, transportation and urban design decisions.

Some recommendations presented on the *Consultant Recommended Development Scenario Street Network Concept Map* will require amendments to the *2010 Revised Countywide Transportation Plan* and should be studied further to determine engineering feasibility.

Typical Street Sections

The *Consultant Recommended Development Scenario* recommends typical street sections for conventional and urban conditions (see pages 31 through 34). The *Street Classification Map* suggests where the typical street sections should be applied in the study area.

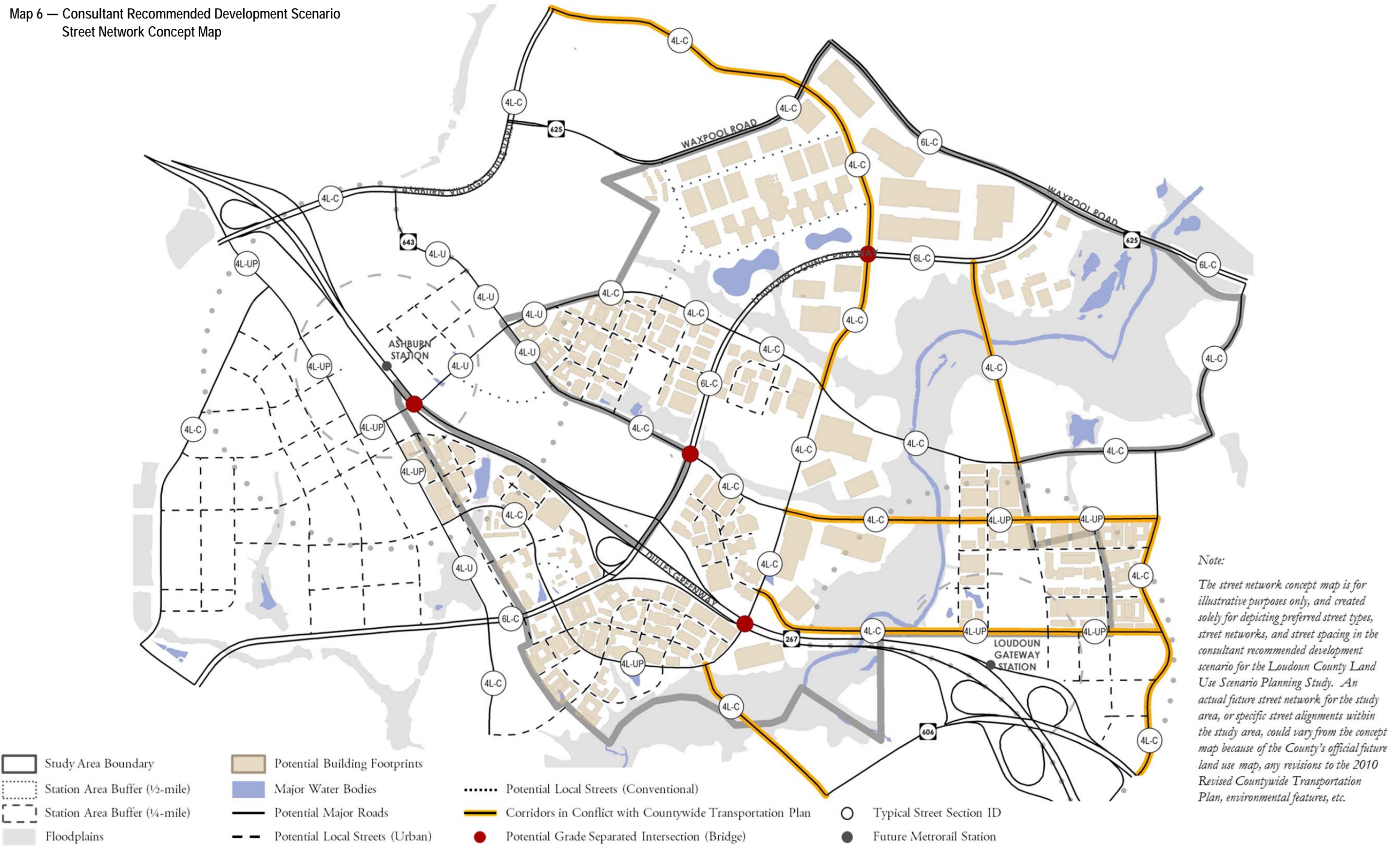
Amendments to the *2010 Revised Countywide Transportation Plan* will be required to implement both the *Street Classification Map* and typical street sections for

conventional and urban conditions. The *Loudoun County Facilities Standards Manual* will also need to be amended to support the urban street sections.

Local Transit Circulator

A local transit circulator service (small bus) should connect proposed mixed-use communities with the two Metrorail stations using a continuous loop route with short headways (see map on page 35). A transit circulator feasibility study should be completed for the study area to confirm when demand for such a service would be high, and establish appropriate service parameters (i.e., technology, exact route, headways, etc.) and cost estimates for implementing the preferred system.

Map 6 — Consultant Recommended Development Scenario
Street Network Concept Map



Map 7 — Consultant Recommended Development Scenario Street Network Concept Map (Annotated)

New “Community Connector” Road

Extend the Loop Road proposed in the County Transportation Plan north from Prentice Drive to Ashburn Village Boulevard (line highlighted in orange) to provide more options for long-distance travel into and out of the study area. Consider existing road alignments (Unnet Drive and Grace Bridge Drive) to make the connection.

Urban Grid Street Pattern

Use a grid network of streets to create more walkable environments, reduce traffic congestion, and provide several route options for reaching destinations. Urban blocks should range between 400 and 800 feet in size for all mixed-use communities.

Grade-Separated Intersections

Consider building grade-separated intersections (overpasses) for Loop Road and Loudoun County Parkway (red circles) to eliminate congestion points and efficiently move vehicles through the study area.

Major Road Grid Network

Build a grid of major roads to reduce congestion and provide several route options between destinations throughout the study area. Optimal spacing for major roads should be 1/4-mile to 1/2-mile.

Extend Lock Ridge Road

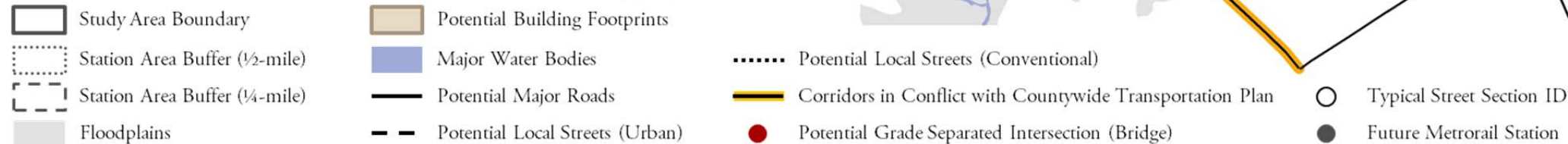
Extend Lock Ridge Road north from Prentice Drive to Loudoun County Parkway (line highlighted in orange) to complete a region-wide grid network, which should reduce traffic congestion and provide several route options for reaching destinations inside and outside the study area.

Re-Align Shellhorn Road

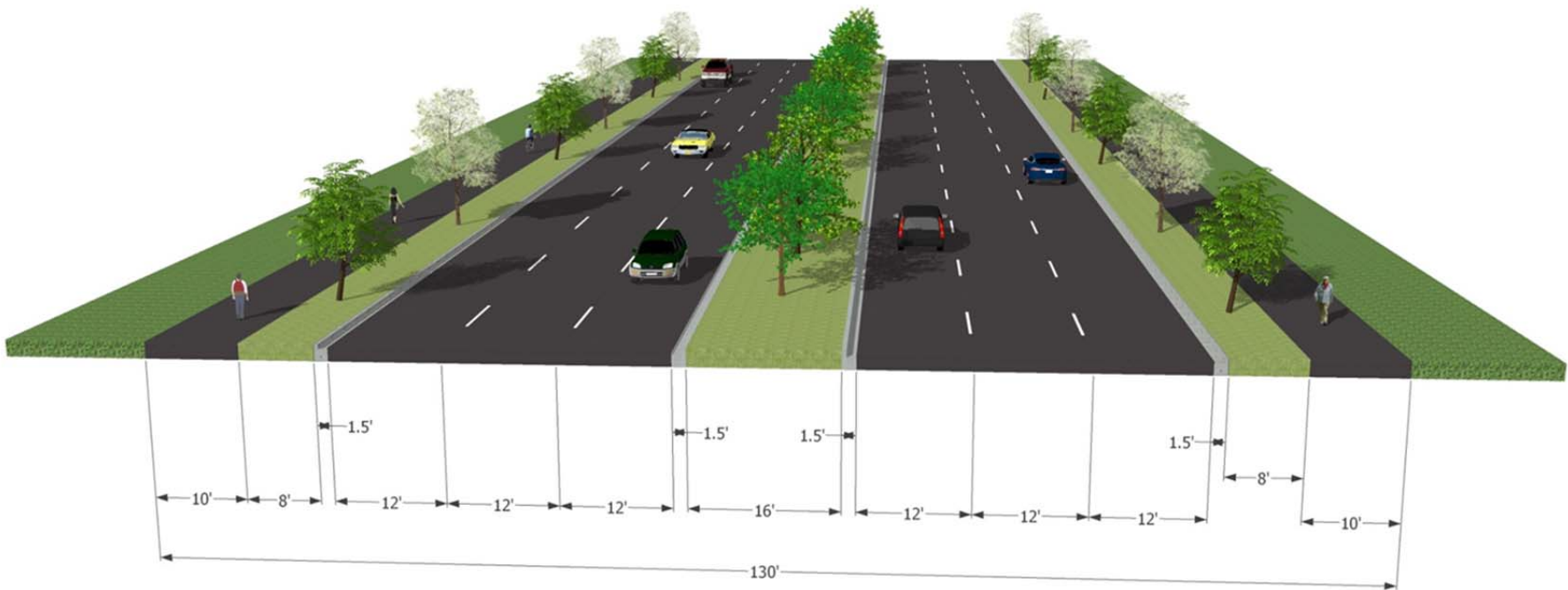
Re-align Shellhorn Road between Loop Road and Lock Ridge Road (line highlighted in orange) to reinforce an urban grid of streets surrounding the Loudoun Gateway Metrorail Station. Moving the alignment north will reduce the number of through trips in the compact center.

New “Metrorail Reliever” Road

Build a new four lane road between Loop Road and Lock Ridge Road (line highlighted in orange) to provide additional capacity and direct routing near the Loudoun Gateway Metrorail Station. A road in this location provides more capacity and route options for vehicle trips to the station (especially for commuter traffic) and makes serving major events at the special activity center more efficient. It also removes through traffic from the compact center (otherwise accessing the station via Shellhorn Road) and helps reduce potential vehicle-pedestrian accidents with lower traffic volumes on local streets. The new road completes an urban grid to serve the compact center.

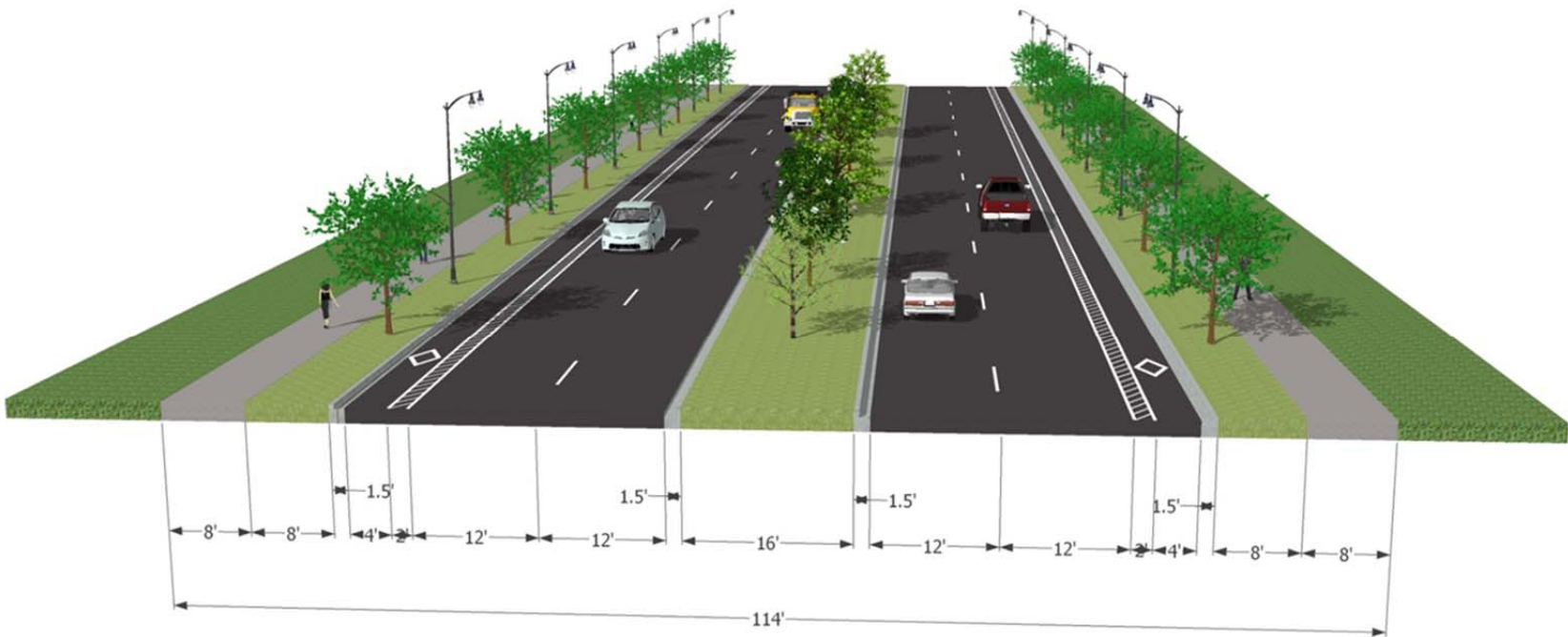


Recommended Typical Street Section — Six Lane Suburban



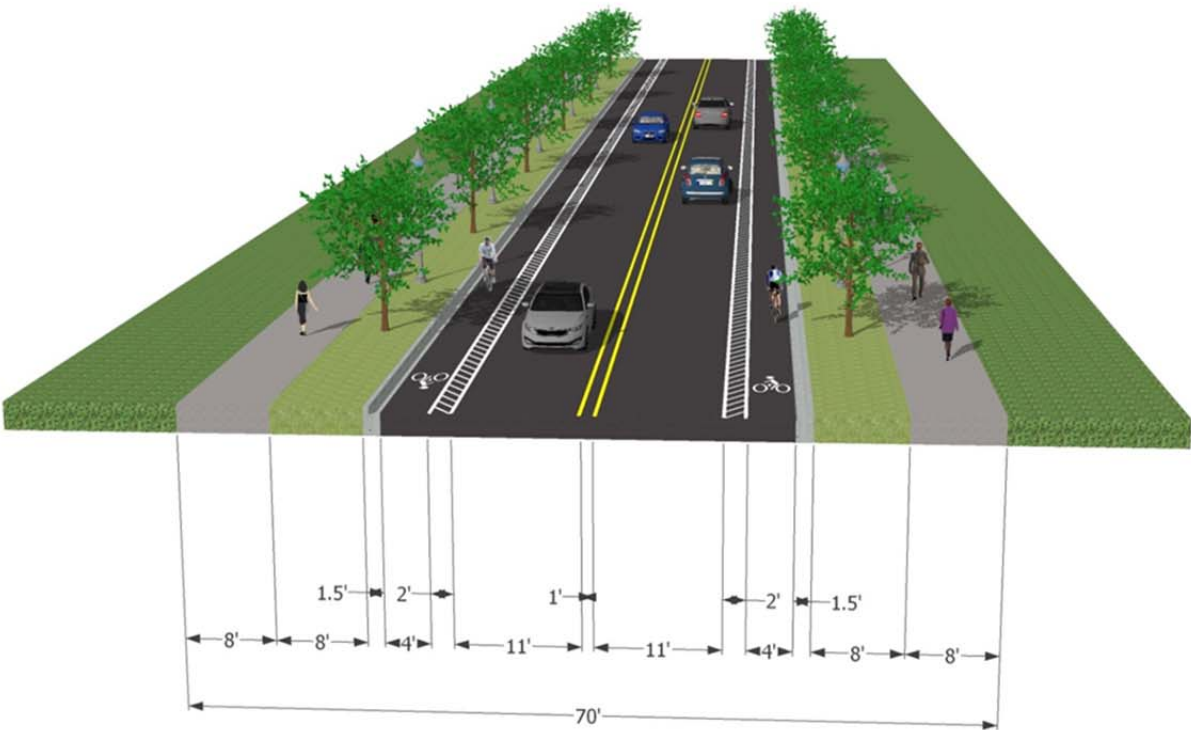
Context	Suburban
Priority Travel Mode	Automobile
Design Speed	55 MPH
ROW Width	130 ft.
Pavement Width	72 ft.
Number of Travel Lanes	6 lanes
Parking Lanes	N/A
Transit Treatment	N/A
Bicycle Treatment	Shared Use Path (Both Sides)
Sidewalk Treatment	Shared Use Path (Both Sides)
Planting Width	8 ft.
Planting Pattern	Continuous
Building Placement	Front Yard Setback (Varies)

Recommended Typical Street Section — Four Lane Suburban



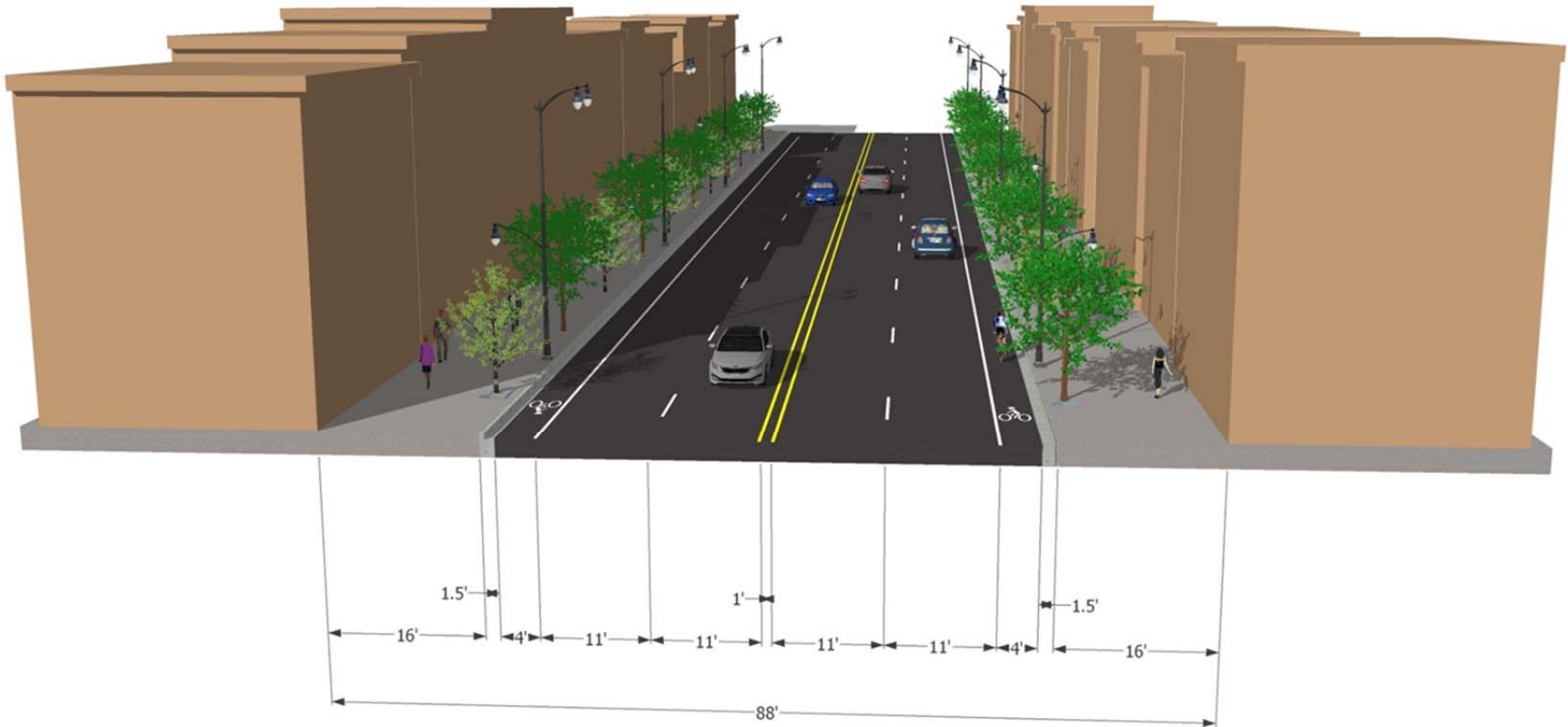
Context	Suburban
Priority Travel Modes	Automobile, Bicycle
Design Speed	45 MPH
ROW Width	114 ft.
Pavement Width	60 ft.
Number of Travel Lanes	4 lanes
Parking Lanes	N/A
Transit Treatment	N/A
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalks (Both Sides)
Planting Width	8 ft.
Planting Pattern	Continuous
Building Placement	Front Yard Setback (Varies)

Recommended Typical Street Section — Two Lane Suburban



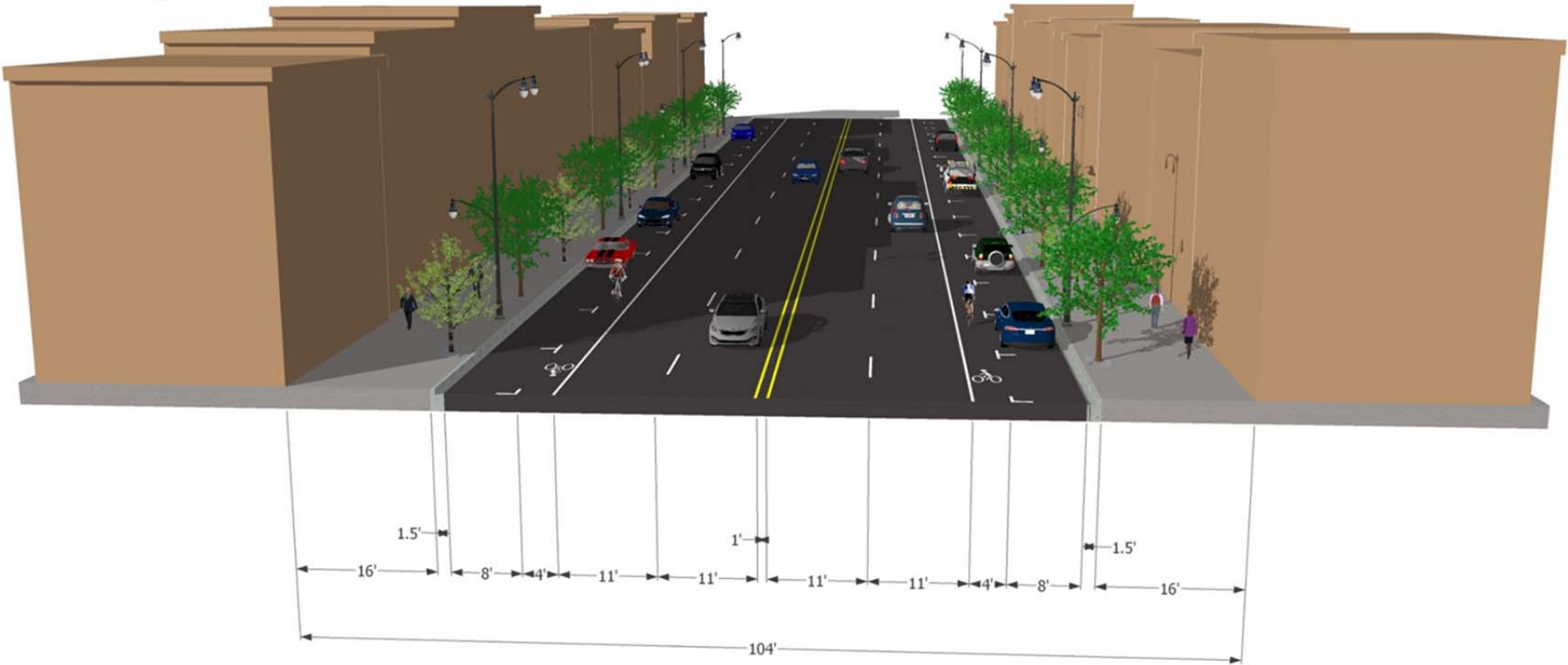
Context	Suburban
Priority Travel Modes	Automobile, Bicycle
Design Speed	35 MPH
ROW Width	70 ft.
Pavement Width	35 ft.
Number of Travel Lanes	2 lanes
Parking Lanes	N/A
Transit Treatment	N/A
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalks (Both Sides)
Planting Width	8 ft.
Planting Pattern	Continuous
Building Placement	Front Yard Setback (Varies)

Recommended Typical Street Section — Four Lane Urban



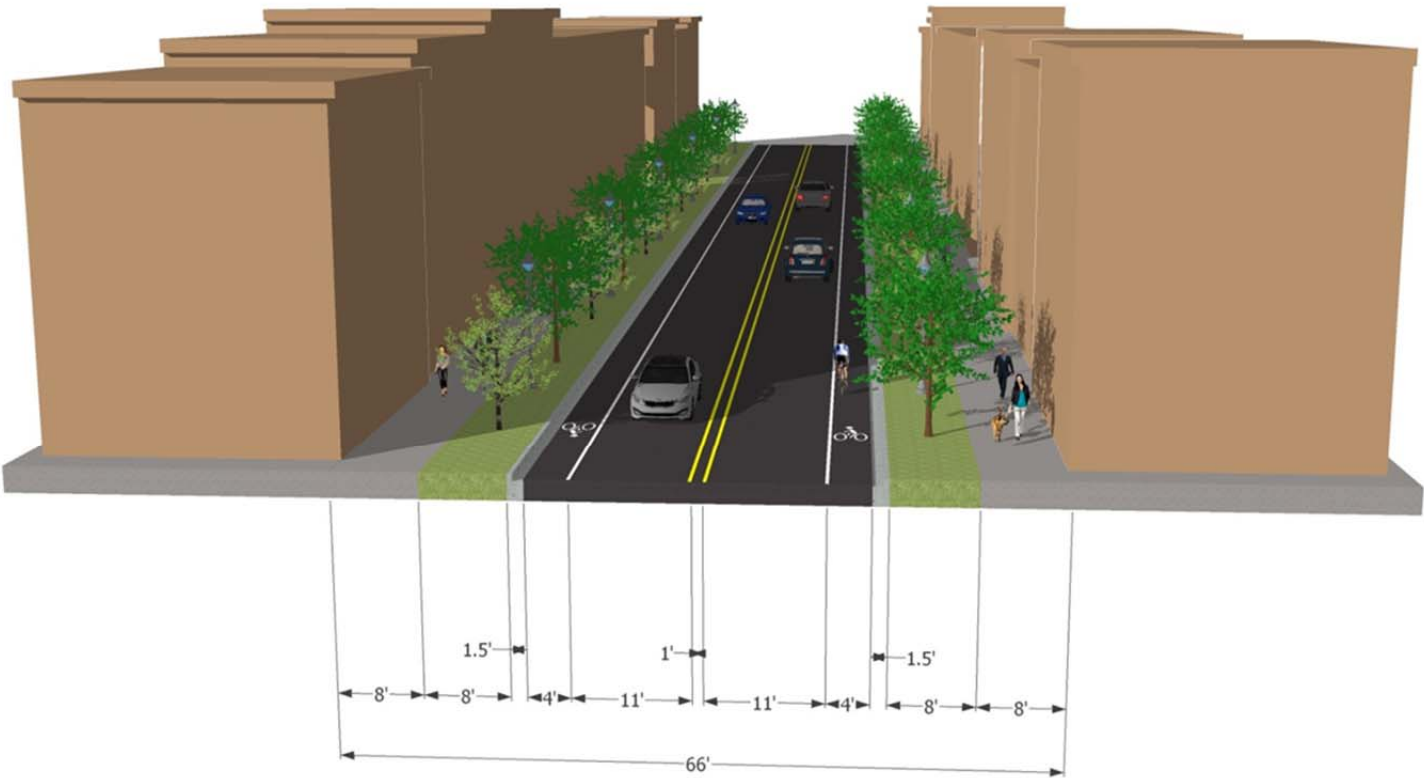
Context	Urban
Priority Travel Modes	Auto, Bus, Bike, Walk
Design Speed	35 MPH
ROW Width	88 ft.
Pavement Width	53 ft.
Number of Travel Lanes	4 lanes
Parking Lanes	N/A
Transit Treatment	Bus Shelters
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalk (Both Sides)
Planting Width	Included in Sidewalk
Planting Pattern	Continuous
Building Placement	Behind Sidewalk

Recommended Typical Street Section — Four Lane Urban with On-Street Parking



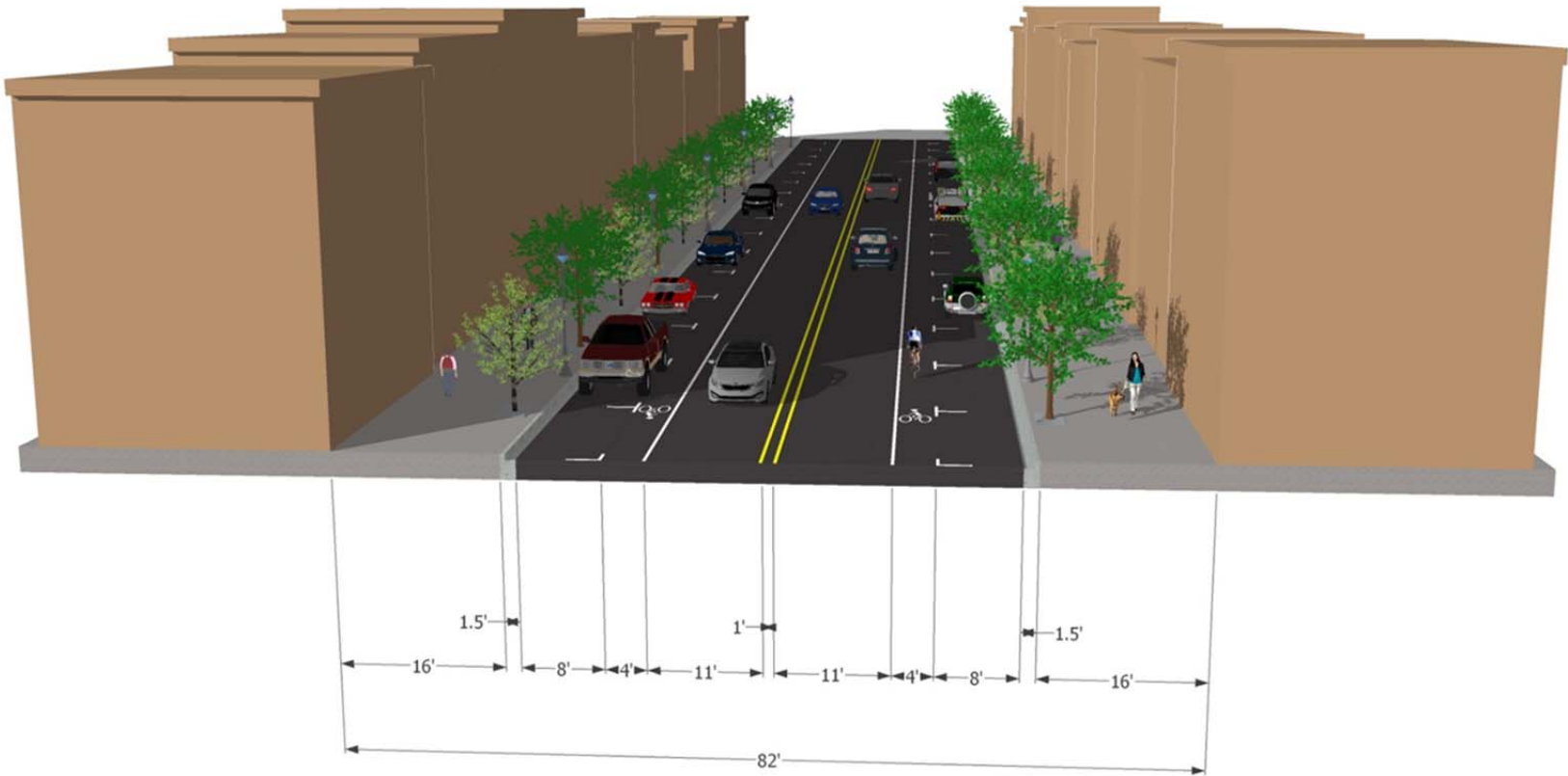
Context	Urban
Priority Travel Modes	Auto, Bus, Bike, Walk
Design Speed	35 MPH
ROW Width	104 ft.
Pavement Width	69 ft.
Number of Travel Lanes	4 lanes
Parking Lanes	2 lanes
Transit Treatment	Bus Shelters
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalk (Both Sides)
Planting Width	Included in Sidewalk
Planting Pattern	Continuous
Building Placement	Behind Sidewalk

Recommended Typical Street Section — Two Lane Urban



Context	Urban
Priority Travel Modes	Auto, Bus, Bike, Walk
Design Speed	35 MPH
ROW Width	66 ft.
Pavement Width	31 ft.
Number of Travel Lanes	2 lanes
Parking Lanes	N/A
Transit Treatment	Bus Shelters
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalk (Both Sides)
Planting Width	8 ft.
Planting Pattern	Continuous
Building Placement	Behind Sidewalk

Recommended Typical Street Section — Two Lane Urban with On-Street Parking



Context	Urban
Priority Travel Modes	Auto, Bus, Bike, Walk
Design Speed	35 MPH
ROW Width	82 ft.
Pavement Width	47 ft.
Number of Travel Lanes	2 lanes
Parking Lanes	2 lanes
Transit Treatment	Bus Shelters
Bicycle Treatment	Bicycle Lanes
Sidewalk Treatment	Sidewalk (Both Sides)
Planting Width	Included in Sidewalk
Planting Pattern	Continuous
Building Placement	Behind Sidewalk

Some service contemplated for the new mixed-use communities should run internal to the development, which would support a major transit node and one or more ‘street stops’ at key locations.

Bicycle & Pedestrian Facilities

A complete network of bicycle and pedestrian facilities throughout the study area — bicycle lanes, bicycle routes, greenways and sidewalks — connect nearby destinations for meeting daily needs while also providing an extensive network for recreation purposes. Most bicycle and pedestrian infrastructure should be included in street construction following ‘complete street’ principles (see typical street sections on pages 31

through 34). A limited number of standalone greenways provide quick, convenient access to nature for communities and centers identified on the *Growth Concept Map* (see green infrastructure map on page 38).

Public Schools, K-12

Loudoun County Public Schools is one of the best performing and fastest growing school districts in Virginia. It currently serves 76,263 students with 86 schools, making it the third largest division in the state. Growth in the county continues to pressure the school system as they try to keep pace with school location/accessibility, program capacity and instructional needs at award-winning levels.

One or more new schools in the study area may be needed based on the location, timing and magnitude of residential development envisioned for the *Consultant Recommended Growth Concept Map*. New schools should be located in areas that maximize student travel by bicycle or walking, and include design features at the school that encourage bicycle or pedestrian access to the site (consistent with published recommendations in *Guidelines for School Facilities in Virginia’s Public Schools, Revised September 2013*).

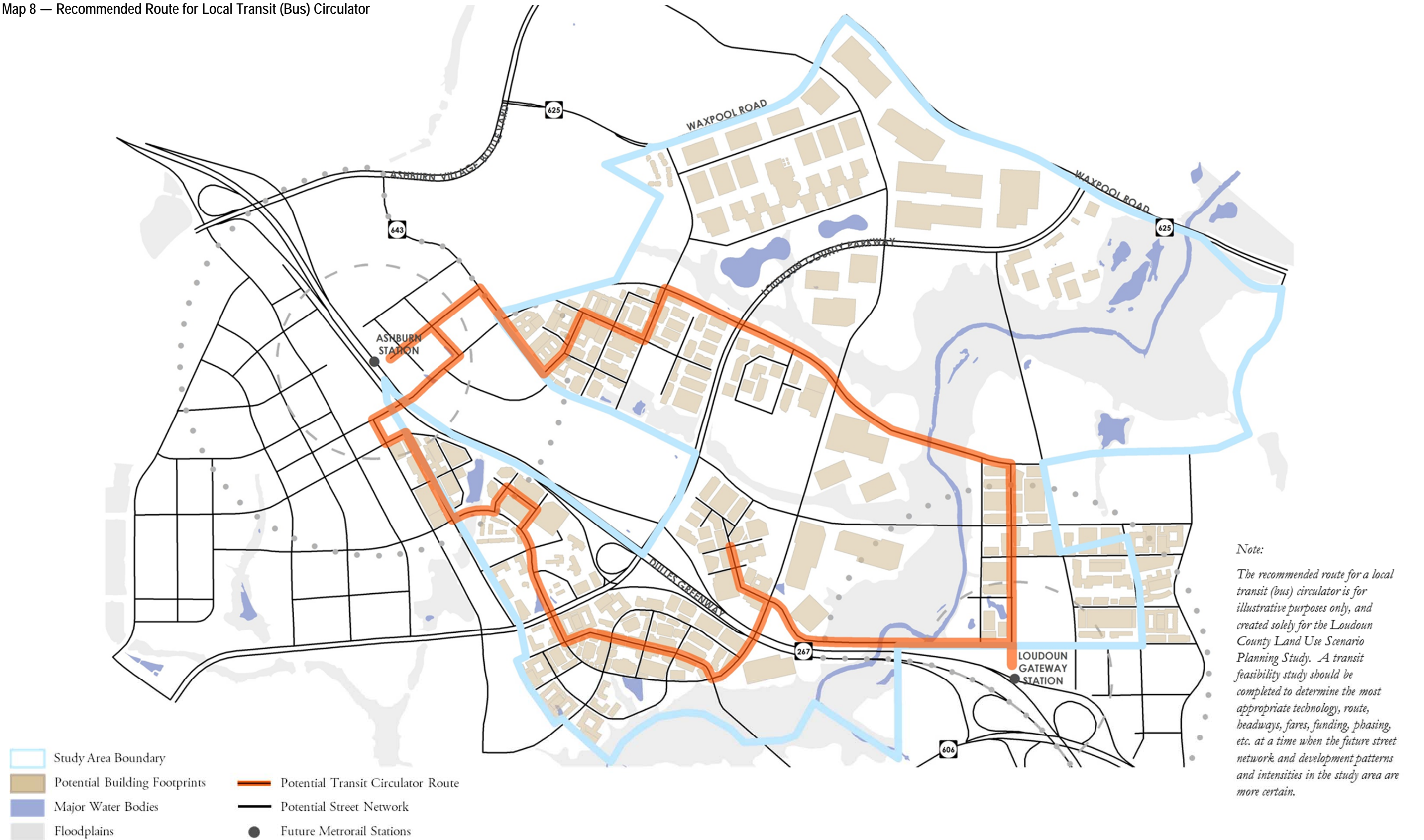
Officials for Loudoun County Public Schools should be a partner during the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment process, and provide direct feedback on

projected impacts to the school system and potential mitigation measures (including new schools) to maintain available capacity.

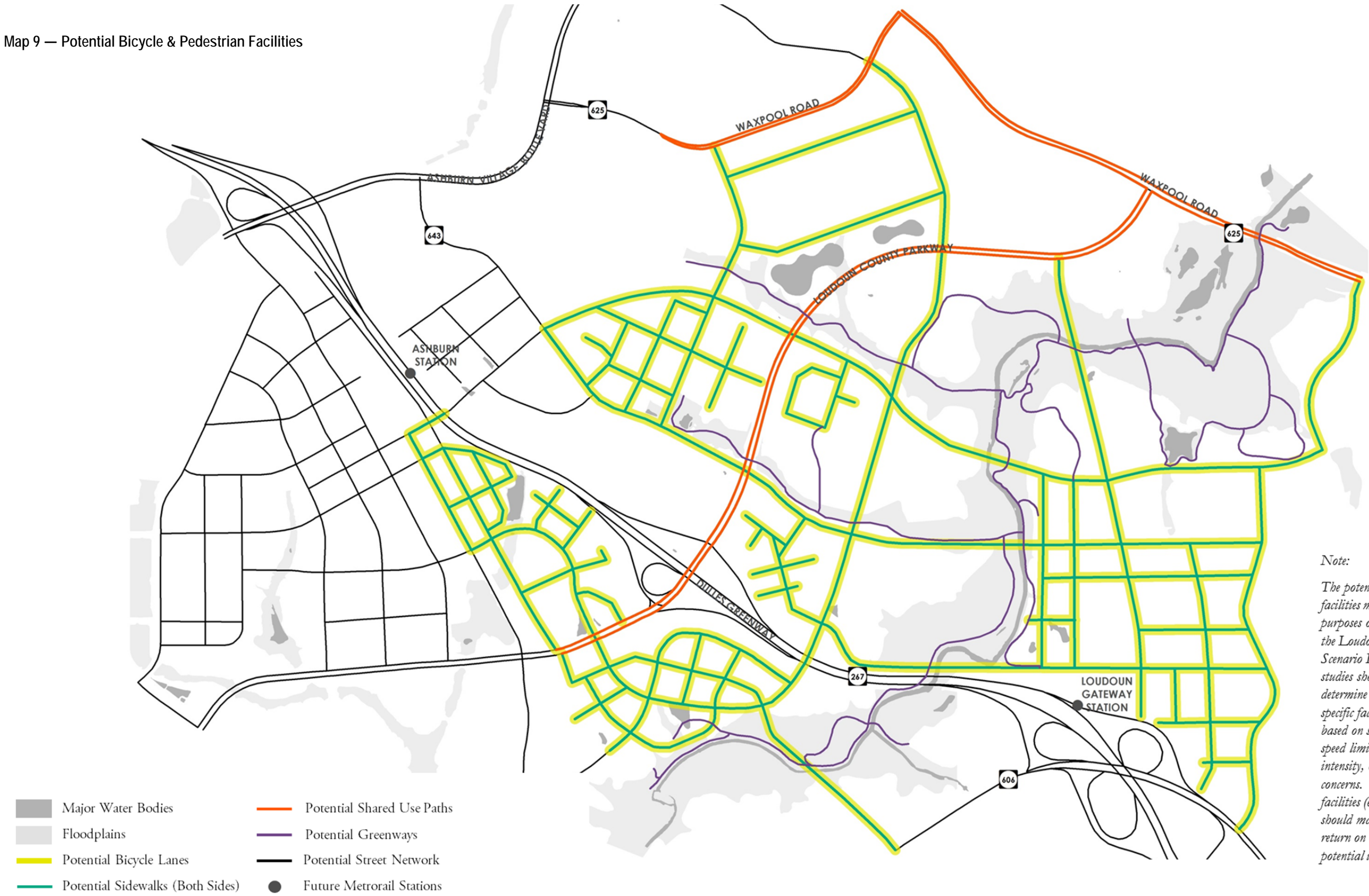
Green Infrastructure

Green infrastructure includes all of the parks, greenways, floodplains, and forested areas now (or planned for) in the study area. Together, they form a “big picture green print” that helps Loudoun County officials prioritize land acquisitions, infrastructure projects, and proffers from future development applications. These areas should become gathering places for young families and single professionals, and be viable trade-offs for accepting higher densities and less private open space in residential or mixed-use living environments.

Map 8 — Recommended Route for Local Transit (Bus) Circulator

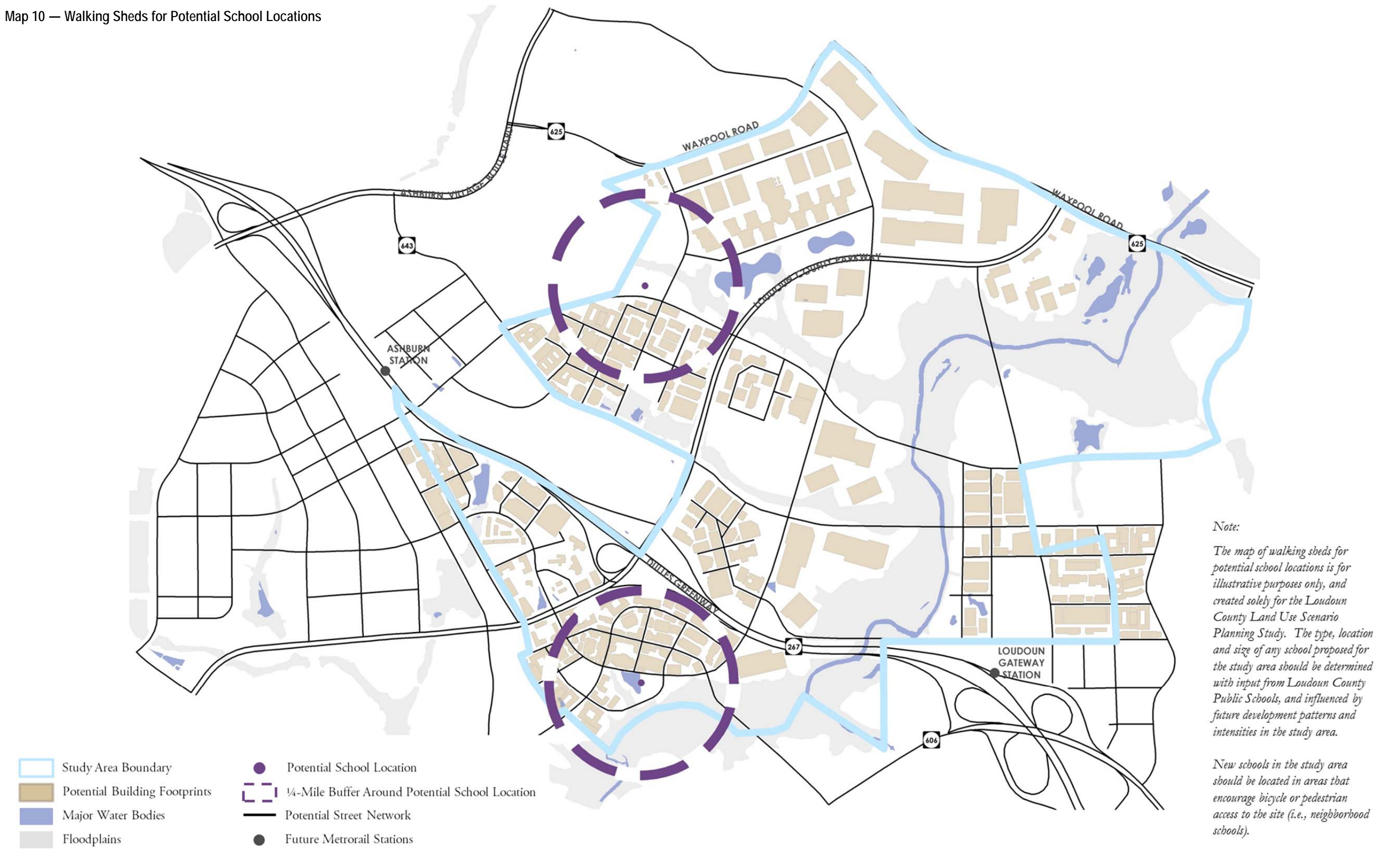


Map 9 — Potential Bicycle & Pedestrian Facilities

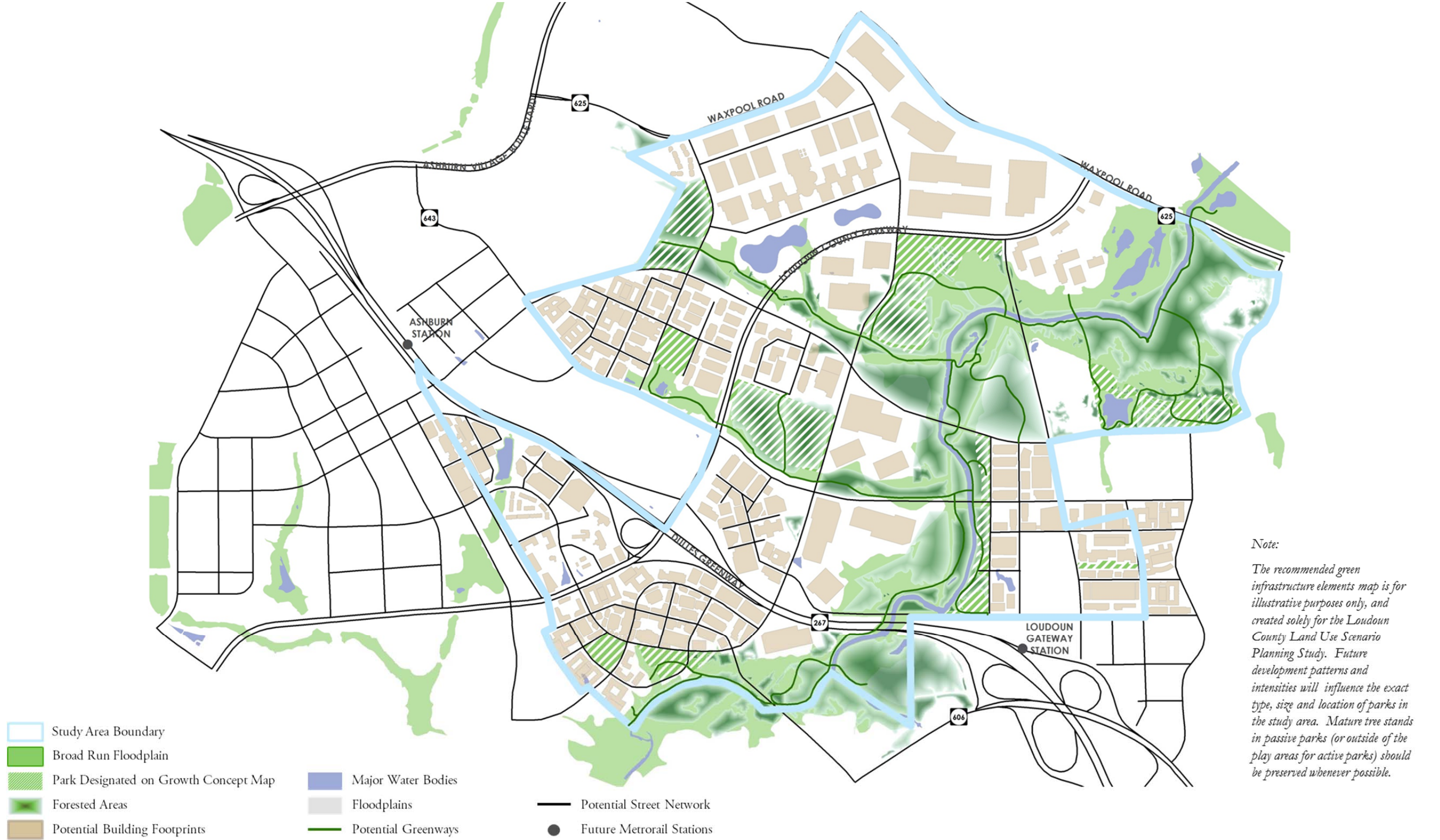


Note:
The potential bicycle and pedestrian facilities map is for illustrative purposes only, and created solely for the Loudoun County Land Use Scenario Planning Study. Further studies should be completed to determine the appropriateness of specific facilities in the study area based on street cross section, posted speed limit, adjacent land use and intensity, or environmental concerns. Exact routes for some facilities (especially greenways) should maximize the County's return on investment in terms of potential use for the facilities.

Map 10 — Walking Sheds for Potential School Locations



Map 11 — Recommended Green Infrastructure Elements



County officials should also use the green infrastructure map and accompanying recommendations to partner with state, regional or non-profit groups working in the area to mitigate the impacts of new development on existing natural systems.

Performance Measures

The Loudoun County Board of Supervisors initiated the Silver Line/Metrorail Tax District Comprehensive Plan Amendment process to evaluate existing and planned land uses around future Metrorail stations and ensure they strike a desired balance between 1) prompt realization of tax revenues to support future Metrorail operations, 2) maximizing future employment generation, 3) achieving a desirable land use pattern, and 4) minimizing demands on the county’s transportation infrastructure.

Performance measures for each Board of Supervisor priority were created to quantify and explain the differences between the trend development scenario (based on the future land use map and policies in the current *Loudoun County Revised General Plan*) and the *Consultant Recommended Development Scenario*. Other scenarios are evaluated in the technical appendix. Summary statistics for comparing the performance measures for each priority were created using CommunityViz software and the Loudoun County Travel Demand Model (see separate technical appendix for more information).

A summary of performance measures for the two scenarios follows on page 39 through 44.

Board of Supervisor Priority —
Prompt Realization of Tax Revenues to Support
Future Metrorail Operations...

Potential Annual Tax Revenue (in million dollars)

	2040	Full Build Out
Trend Development Scenario	\$43.7	\$128.4
Consultant Recommended Development Scenario	\$92.9	\$212.3






Insight:

The mix of uses and intensity of development in the Consultant Recommended Development Scenario are expected to generate more ad valorem tax revenue for Loudoun County both in 2040 and full build out of the study area (compared to the Trend Development Scenario).

Potential Annual Operating Costs for County Services (in million dollars)

	<u>2040</u>	<u>Full Build Out</u>
Trend Development Scenario	\$10.6	\$27.6
Consultant Recommended Development Scenario	\$43.0	\$71.5




Insight:

The mix of uses (especially residential uses) and intensity of development in the Consultant Recommended Development Scenario are expected to generate more costs to Loudoun County for providing annual services both in 2040 and full build out of the study area (compared to the Trend Development Scenario).

Annual Net Operating Revenue Potential (in million dollars)

	<u>2040</u>	<u>Full Build Out</u>
Trend Development Scenario	\$33.1	\$100.8
Consultant Recommended Development Scenario	\$49.9	\$140.8




Insight:

The mix of uses and intensity of development in the Consultant Recommended Development Scenario are expected to generate more net operating revenue for Loudoun County (compared to the Trend Development Scenario) that could be used for funding future capital investments in the study area (general fund expenditures).

Potential Annual Tax Revenue in Metrorail Service District (in million dollars)

	<u>2040</u>	<u>Full Build Out</u>
Trend Development Scenario	\$1.9	\$5.3
Consultant Recommended Development Scenario	\$6.8	\$12.7




Insight:

The mix of uses and intensity of development in the Consultant Recommended Development Scenario are expected to generate more revenue for the Metrorail Service District both in 2040 and full build out of the study area (compared to the Trend Development Scenario).


Board of Supervisor Priority —
Maximize Future Employment Generation...

Potential for New Employment Opportunities (new employees)

	2040	Full Build Out	
Trend Development Scenario	13,633	45,543	
✔ Consultant Recommended Development Scenario	21,067	58,840	


Insight:
The intensity of non-residential development in compact centers for the Consultant Recommended Development Scenario is expected to generate more employment opportunities (measured in pure jobs) when compared to the low-density, keynote employment uses prevalent in the Trend Development Scenario.

Jobs-to-Housing Balance Ratio (total jobs divided by total households)

	2040	Full Build Out	
Trend Development Scenario	22.06	73.69	
✔ Consultant Recommended Development Scenario	2.72	6.06	

Insight:
The mix of residential and non-residential uses in the Consultant Recommended Development Scenario provides a stronger jobs-to-housing balance for the study area (represented by lower numbers in the table). Greater balance in the study area promotes shorter commute distances and shorter commute times, which should also promote more active modes of transportation (transit, bicycle or pedestrian) and reduce overall congestion on the street network. Less time commuting provides more time to residents for other daily needs or interests.


New Employment Opportunities (percent distribution of new employees by land use category)

	Data Center	Industrial	Suburban Commercial	Suburban Office	Hotel	Compact Commercial	Compact Office	Mixed-Use Building	
Trend Development Scenario (2040)	3%	0%	1%	94%	2%	0%	0%	0%	
Trend Development Scenario (Build Out)	3%	1%	2%	93%	1%	0%	0%	0%	
✔ Consultant Recommended Development Scenario (2040)	1%	0%	2%	44%	0%	0%	38%	15%	
✔ Consultant Recommended Development Scenario (Build Out)	2%	0%	1%	26%	0%	3%	53%	15%	

Insight:
The Consultant Recommended Development Scenario represents a major shift in employment opportunities for the study area, concentrating a significant number of new jobs (53% in 2040 and 71% at build out) in compact, walkable activity centers near Metrorail service. The shift in employment opportunities is consistent with the changing economy, future market demands and new site location preferences for the Greater Washington Metropolitan Region summarized in the *Market Analysis and Best Practices Study for Loudoun County's Metrorail Station Areas*. Employment diversity in the study area provides a competitive advantage for recruiting new businesses now and in the future.

Board of Supervisor Priority —
Achieve Desirable Land Use Patterns...


General Development Profile (percent distribution of development type by category)

	Standalone Residential	Standalone Non-Residential	Walkable Non-Residential	Walkable Mixed-Use	Parks or Open Space	
Trend Development Scenario (Build Out)	2%	65%	5%	0%	28%	
✔ Consultant Recommended Development Scenario (Build Out)	2%	27%	18%	12%	41%	

Insight:

The Consultant Recommended Development Scenario better responds to the mix of uses, development intensities and place-based development principles requested by participants in the scenario planning process (and confirmed by the *ULI Technical Assistance Panel Report* and *Market Analysis and Best Practices Study for Loudoun County's Metrorail Station Areas Report* as viable uses and densities moving forward).

Potential Housing Choices (percent distribution by generalized housing category)

	Standalone Suburban Single Family Residential	Standalone Suburban Multifamily Residential	Multifamily in Mixed-Use Community	
Trend Development Scenario (2040)	0%	100%	0%	
Trend Development Scenario (Build Out)	0%	100%	0%	
✔ Consultant Recommended Development Scenario (2040)	0%	34%	66%	
✔ Consultant Recommended Development Scenario (Build Out)	0%	28%	72%	

Insight:

The Consultant Recommended Development Scenario responds to changing housing markets near Metrorail stations in the Greater Washington Metropolitan Region by introducing a new urban, multifamily attached product (home size generally between 700 – 1,000 sq. ft.). Household size, student generation, trip generation and demand for other county facilities and services are typically lower per unit than any other housing choices currently in Loudoun County. Residents willing to ‘live smaller’ may also find more housing affordability options in new mixed-use communities (based on national trends, not verified by study in Loudoun County).

Board of Supervisor Priority —
Achieve Desirable Land Use Patterns (cont.)...

New Residential Dwelling Unit Characteristics

	Total Dwelling Units	Average Residential Density	Dwelling Units Inside Ldn 60 Noise Contour	% of Dwelling Units Inside Ldn 60 Noise Contour
Trend Development Scenario (2040)	618	17.79 du/ac	0	0%
Trend Development Scenario (Build Out)	618	17.79 du/ac	0	0%
✔ Consultant Recommended Development Scenario (2040)	7,734	53.14 du/ac	1,277	17%
✔ Consultant Recommended Development Scenario (Build Out)	9,705	42.35 du/ac	2,135	22%



Insight:

The Consultant Recommended Development Scenario identifies Dulles International Airport as a very important asset for the region, and something that should be protected when land use decisions are made in the study area. Residential uses inside the Ldn 60-65 noise contour area should be limited to mixed-use communities or urban multifamily attached buildings shown on the Growth Concept Map (identified as pink or brown areas close to Metrorail service). In all exceptions, a significant amount of land is available in planned communities to locate residential development outside the Ldn 60-65 noise contour area; however, critical design features for a mixed-use community (namely residential units over storefronts) may warrant some residential units inside the Ldn 60-65 noise contour area. Detailed design studies for mixed-use communities inside the Ldn 60-65 noise contour area may result in a number of units less than those reported above. Average residential densities reported for the Consultant Recommended Development Scenario should support a viable transit circulator (bus) between the two Metrorail stations.

Potential New Students

	2040	Full Build Out
✔ Trend Development Scenario	142	142
Consultant Recommended Development Scenario	1,779	2,232



Insight:

Residential uses and intensities in the Consultant Recommended Development Scenario are expected to generate more students when compared to the Trend Development Scenario. New school sites in the study area could be proffered during the entitlement process; however, new school construction and annual maintenance costs will impact future budgets for Loudoun County.

Potential Parks & Open Space (in acres)

	2040	Full Build Out
Trend Development Scenario	392	392
✔ Consultant Recommended Development Scenario	582	582




Insight:

Concentrating future development into compact, high-density centers leaves significant amounts of land available for parks and open space in the Consultant Recommended Development Scenario (nearly 48% more land area when compared to the Trend Development Scenario). Parks and open space are needed adjacent to the new centers as a viable trade-off for accepting higher densities and less private open space in an urban environment.


Board of Supervisor Priority —
Minimize Demands on the County’s Transportation System...

Potential New Daily Vehicle Trips

	<u>2040</u>	<u>Full Build Out</u>	
✓ Trend Development Scenario	20,165	64,092	
Consultant Recommended Development Scenario	51,983	119,521	


Insight:
The mix of uses and intensity of development in the Consultant Recommended Development Scenario are expected to generate more daily vehicle trips both in 2040 and full build out of the study area compared with to the Trend Development Scenario.

New Walkable / Active Street Frontage (in miles)

	<u>2040</u>	<u>Full Build Out</u>	
Trend Development Scenario	0.0	0.0	
✓ Consultant Recommended Development Scenario	14.6	24.0	

Insight:
The Consultant Recommended Development Scenario includes several compact, walkable communities near Metrorail service. Small blocks, grid of streets, urban street design principles, mix of uses and higher building densities / intensities in these communities all promote increased walking and street activity.

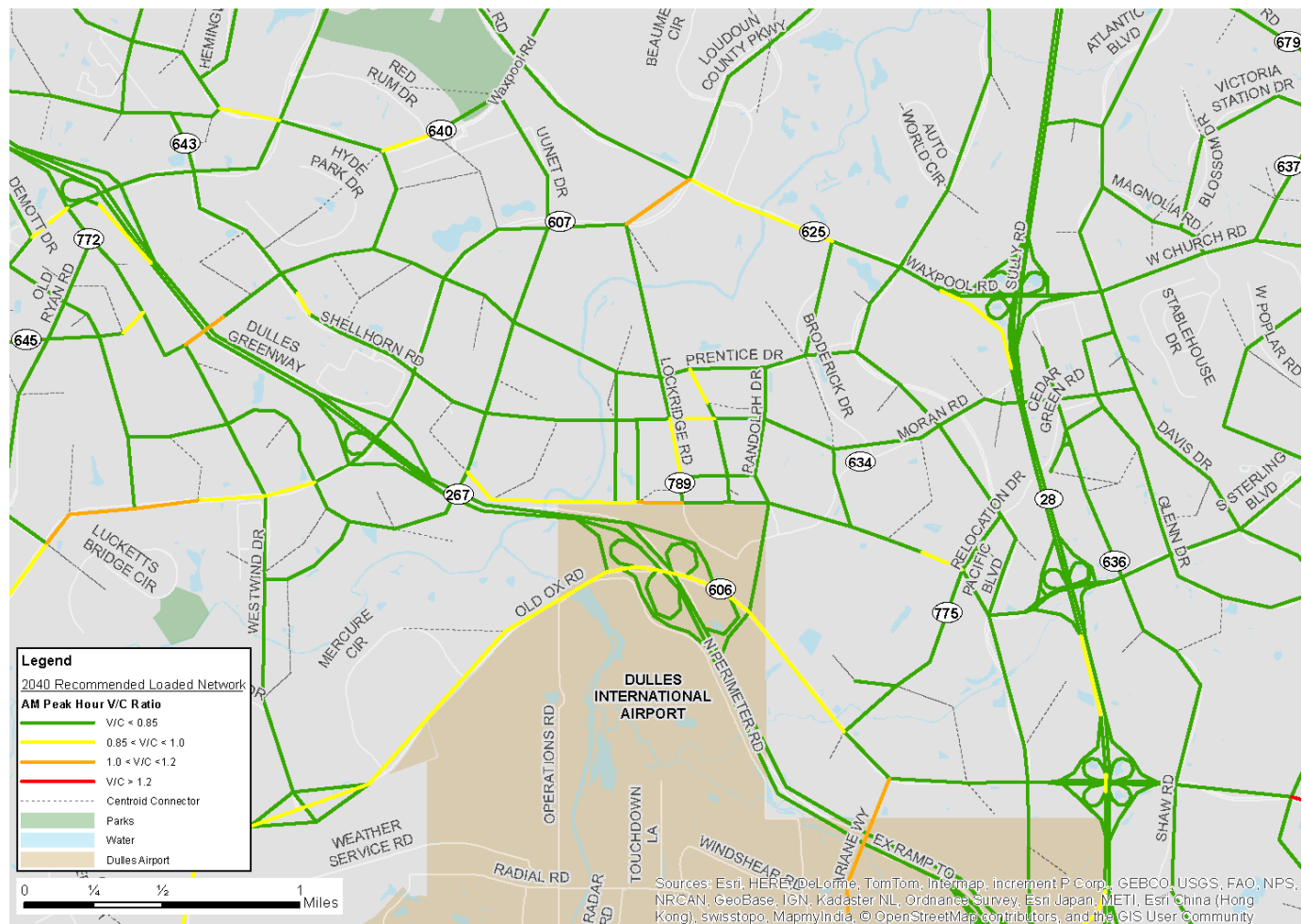
Accessibility to Local Circulator Bus (residents living within ¼-mile of proposed route)

	<u>2040</u>	<u>Full Build Out</u>	
Trend Development Scenario	1,220	1,220	
✓ Consultant Recommended Development Scenario	13,944	17,387	

Insight:
The location and intensity of residential uses in the Consultant Recommended Development Scenario provides quick, convenient access to local circulator (bus) transit or Metrorail service for nearly all residents living in the study area (96% both in 2040 and full build out of the study area).

Anticipated Street Network Efficiency (modeled volume-to-capacity ratios)*

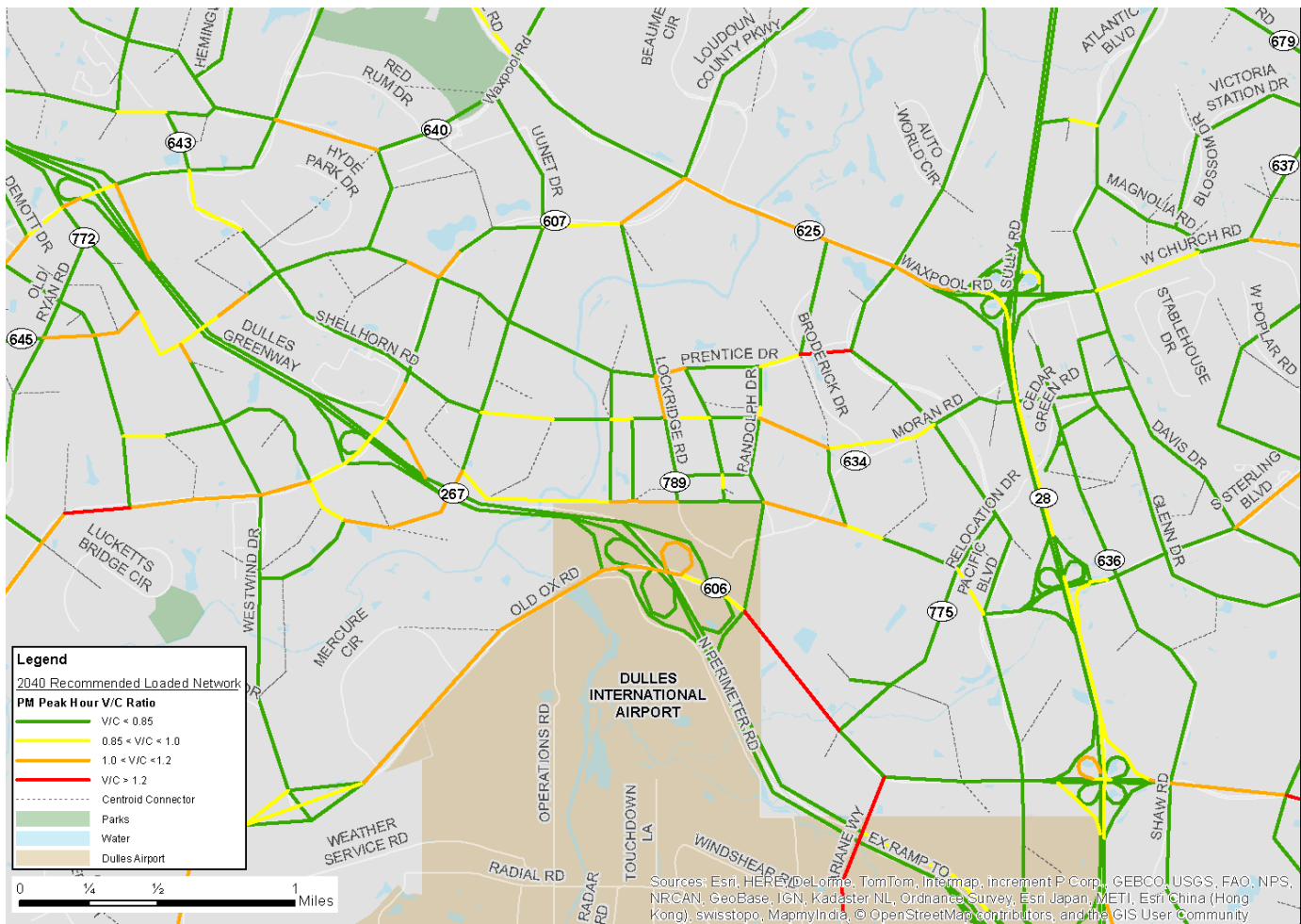
Map 12 — Loaded Street Network for the Consultant Recommended Scenario (AM Peak Period — 2040)



The street network for the consultant recommended development scenario (proposed on page 29) is expected to generally accommodate AM peak hour traffic anticipated in the study area through 2040. Short segments of Loudoun County Parkway and Sterling Boulevard could reach or slightly exceed a vehicle-to-capacity ratio greater than 1.0 (indicating a link over capacity) as proposed, but all other major streets are forecasted to operate below design capacity during the AM peak hour.

* = Transportation Analysis presented on page 44 prepared by the Loudoun County Department of Transportation & Capital Infrastructure with assistance from Kimley-Horn and Associates, Inc.

Map 13 — Loaded Street Network for the Consultant Recommended Scenario (PM Peak Period — 2040)



The street network for the consultant recommended development scenario (proposed on page 29) is expected to generally accommodate PM peak hour traffic anticipated in the study area through 2040; although traffic volumes are expected to be higher compared to the AM peak hour condition (something typical throughout Loudoun County). Portions of Sterling Boulevard, Moran Road, Prentice Drive, Lockridge Road, Loudoun County Parkway, Barrister Street and Waxpool Road could reach or slightly exceed a vehicle-to-capacity ratio greater than 1.0 (over capacity) as proposed. A short segment of Prentice Drive, between Broderick Drive and Pacific Boulevard, could experience significant congestion during the PM peak hour, but site specific intersection improvements could improve conditions. All other major streets are forecasted to operate below design capacity during the PM peak hour.

A planning-level transportation link analysis was performed by Loudoun County to evaluate expected congestion levels for the consultant recommended development scenario in 2040 (AM and PM peak hour conditions). The analysis assumed partial build out of the recommended growth concept map (anticipated growth through 2040) and the street network proposed on page 29. Conditions were evaluated using the Loudoun County Travel Demand Model (CUBE software - base model). Model runs were performed for peak hours using major and connecting roads identified in the study area, which were selected based on the County's existing traffic analysis zone (TAZ) structure. The analysis does not assume increased trip reduction factors for transit, bicycle or walking beyond what is already assumed in the base model (a conservative assumption based on the uses, densities and walkable streets advocated for the consultant recommended development scenario).

Generally, the recommended street network provides more road links than the current street network in the 2010 Loudoun County Countywide Transportation Plan. The grid network of streets also provides more route options for traveling to and within the study area. The analysis shows that development of the study area under the consultant recommended growth scenario (assuming anticipated growth through 2040) will not significantly degrade the transportation system as a whole.

Conclusion

The *Loudoun County Land Use Scenario Planning Study* confirmed that land use patterns and development intensities have a significant impact on community character and cohesiveness, future economic vitality, financial sustainability, and the efficient use of infrastructure. Information prepared for the *Consultant Recommended Development Scenario* should be a guide for the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment (CPAM).

Implementing the recommended maps, guiding principles and key development and design statements in this document will require amendments to the *Loudoun County Revised General Plan*, *Loudoun County Zoning Ordinance*, *Loudoun County Subdivision and Development Ordinance* and *Loudoun County Transportation Plan*. The most immediate needs for change/further study include:

- Amend the *Loudoun County Revised General Plan*, *Loudoun County Zoning Ordinance*, and *Loudoun County Subdivision and Development Ordinance* to allow mixed-use development and urban densities/intensities consistent with the *Consultant Recommended Development Scenario Growth Concept Map*.
- Amend the *Loudoun County Revised General Plan* and *Loudoun County Zoning Ordinance* to allow interim uses and phased development, promote bicycle/pedestrian mobility, support future transit service, and key urban development and design principles recommended throughout the *Consultant Recommended Development Scenario Workbook*.
- Amend the *Loudoun County Zoning Ordinance* to permit uses and intensities recommended throughout the *Consultant Recommended Development Scenario Workbook*; while also discouraging uses, intensities, and design principles not consistent with the recommended vision/guiding principles/growth concept map for the study area.
- Study in further detail recommended transportation concepts/improvements for the study area, and amend the *Loudoun County Transportation Plan* (as deemed necessary) to

promote a transportation network that provides mobility to all users (vehicle, bus transit, bicycle and pedestrian) without adversely affecting the development types, patterns and intensities advocated for in the *Consultant Recommended Development Scenario Workbook*.

Working with land owners, developers, service providers and the public during this process will build widespread support and expedite construction (and thus tax revenue) consistent with a changing economy and market demands. Additional studies or plans for specific areas, issues or themes identified in this document may be needed to support their implementation.

Please check the website for the Loudoun County Silver Line/Metrorail Tax District Comprehensive Plan Amendment to stay involved in the planning process (via a web link at www.loudoun.gov/planning).