Transforming Urban Public Space: Addressing Climate Change, Accessibility, and Social Exclusion

International Urban and Regional Cooperation

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Arlington Context

- Politically progressive
- Activist citizenry
- Early adopter of Smart Growth principles
- Population density and transitoriented development
- Predominance of multi-family dwellings (71% of housing units)
- First U.S. LEED® Platinum City (2017)
- Recertified LEED® Platinum City 2023

Challenge: State law controls building and development codes.

Location

Arlington is an urban county of about 26 square miles located directly across the Potomac River from Washington DC.



Hous

VIRGINIA

ARLINGTON



There are 119,700 housing units in the County, 8,650 of which are committed affordable.

People



52% of Arlington's residents live in planning corridors, which make up 22% of the County's land area.



Arlington is one of the most highly educated localities in the Nation, with 40% of residents holding a Graduate or Professional Degree.



An estimated 25,990 people, 10% of Arlington's population, are age 65 years and older.

Development

With 41.8 million square feet of rentable building area, Arlington has more private office space than the downtowns of Los Angeles, Denver, and Atlanta, and the Central Business Districts of Dallas and Seattle.



Households

Since 1980, the majority of Arlington households consist of a single person or nonrelated individuals.



Multi-Modal Transportation



Arlington has 11 Metrorail stations and 16 ART Bus routes that operate throughout the County.

In 2020, travel on the W&OD Trail increased by 22% walking and 48% biking on the Four Mile Run Trail.

Students



The diverse student body of Arlington Public Schools speaks a total of 115 languages.

Employment



In 2020, Arlington's resident civilian labor force held steady at 155,891.

Parks

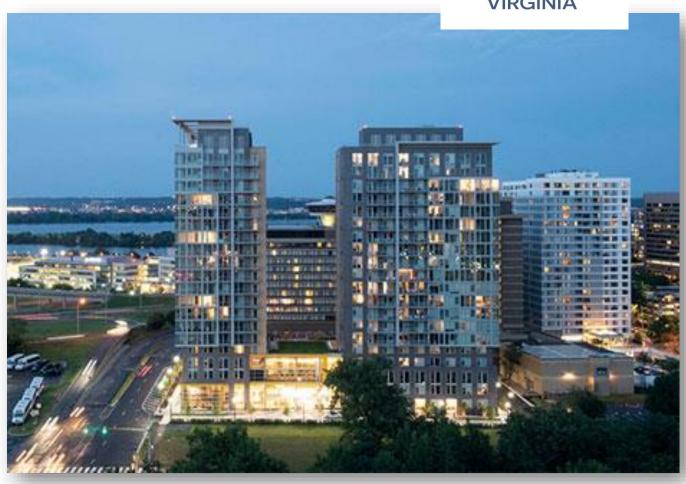
99% of residents live within a 10-minute walk to a park.



Green Building Incentive Policy



- Voluntary program
- Arlington offers developers bonus density in exchange for sustainable design & construction
 - Energy and water efficiency
 - Low-carbon materials
 - Biophilic design
 - Electric vehicle charging
 - Equity measures
- Must meet all requirements (prerequisites) + Extra List items
- Furthers the goals of Arlington County's Community Energy Plan including carbon neutrality by 2050



amazon

Design Precepts: Master Plan through Design



Engage the Community

Contribute to sense of place and community vitality



Be Resilient

Infuse with sustainable systems to support health and wellness



Make Connections

Create an enhanced streetscape and public realm integrated with multiple modes of transportation



Enrich the Public Realm

Create ample public space and foster a pedestrianoriented environment



Be Open and Welcoming

Dedicate the ground level to public use and include neighborhoodserving retail, restaurant, and services as well as recreational opportunities



Be Accessible

Address the needs of all potential users, regardless of ability



Embrace Diversity in the Built Environment

Well-detailed, carefully massed architecture, meaningfully interacting with open spaces



Incorporate Nature

Design a landscape appropriate to the location that offers visual interest in all seasons



Celebrate the Unique Aspects of the Site

Unveil the history and special qualities of PenPlace and Pentagon City



Delight and Surprise Include the unexpected

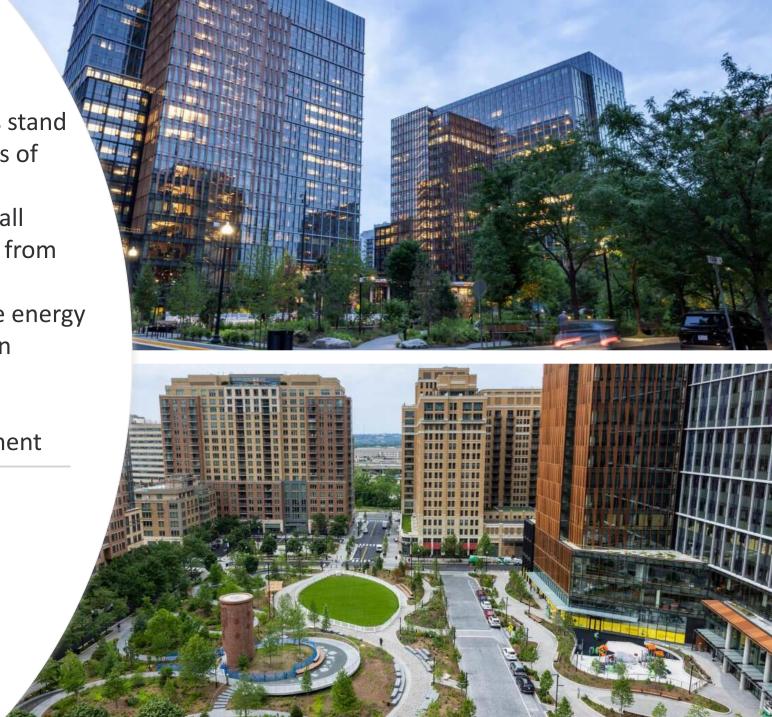
Metropolitan Park's two 22-story buildings stand
 327 feet tall and include 200,000 cubic yards of concrete

•During construction, 82% (17,000 tons) of all construction waste materials were diverted from landfills

 Met Park is powered with 100% renewable energy procured from the Maplewood Solar Farm in Virginia

•The County is a 37% off-taker from Maplewood to power 100% of government operations

Amazon Met Park Buildings

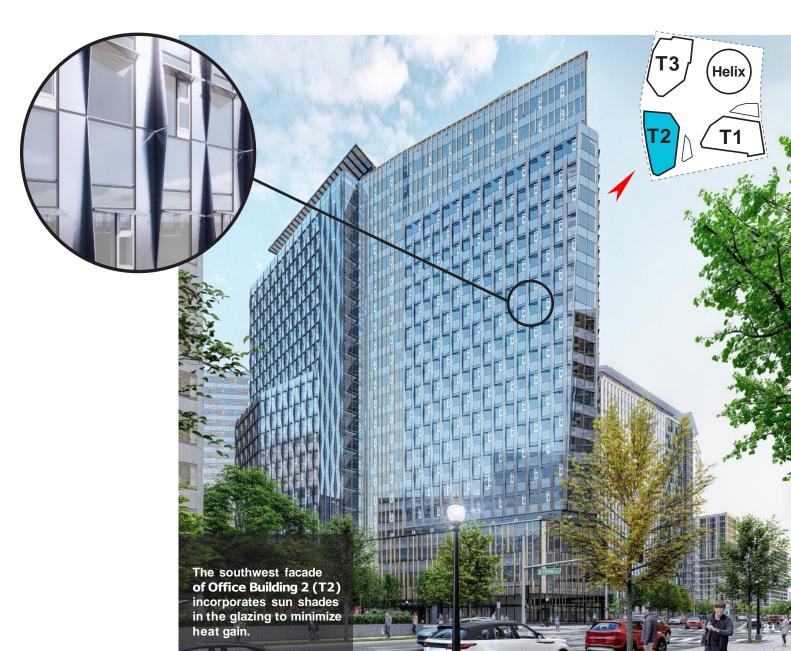


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Sustainable Design Details: High Performance Building Facades

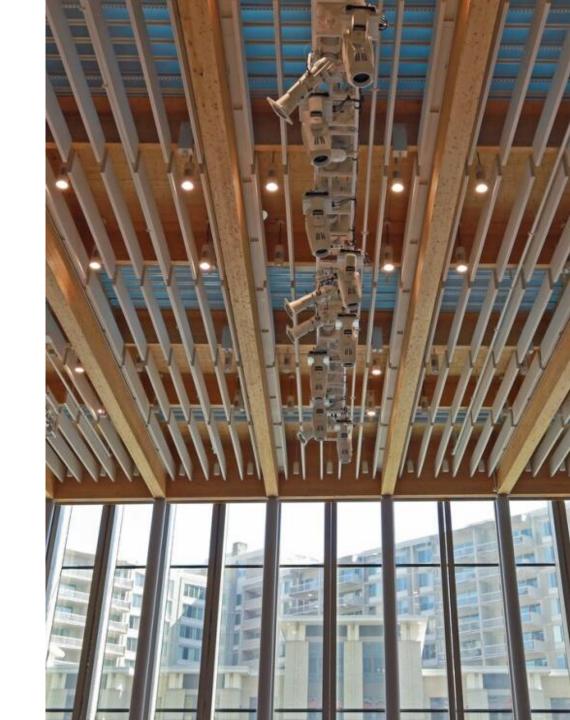


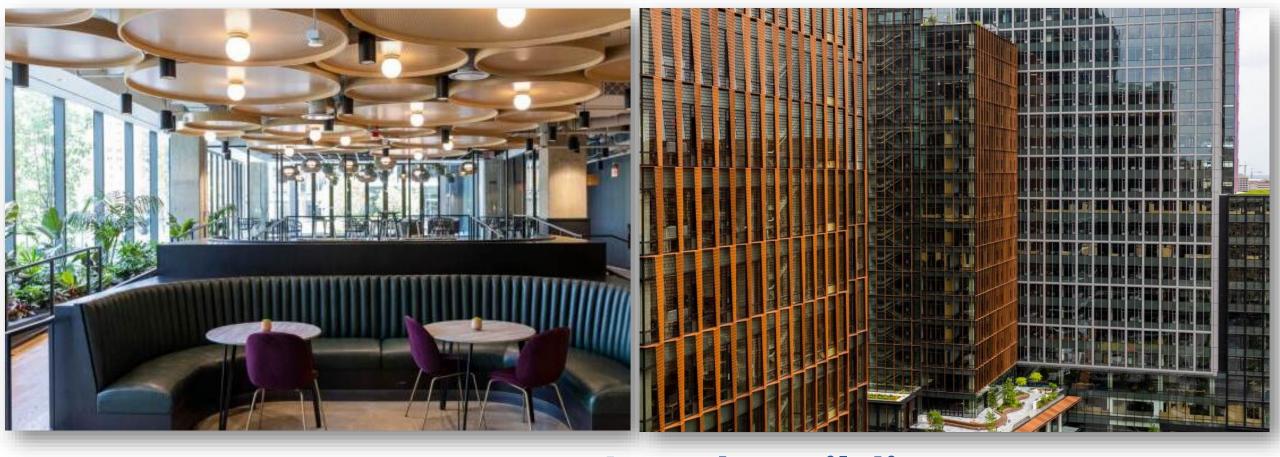
- Climate Responsive Office Building **Facade Design, includes:**
 - Orientation-based window-to-wall ratio
 - Careful glazing selection (including bird-safe glass) evaluating u-factor performance in heating / cooling and lowering the embodied carbon of the façade material
 - External shading to balance cooling load, glare and natural daylight
 - Specifications to reduce air infiltration and meet Arlington County's air tightness requirements to further reduce heating demands
- Fins Tailored to Solar Directions for Visual **Comfort & Maximized Cooling Effect**



Amazon Met Park buildings

- Advanced low-carbon concrete and CarbonCure helped Amazon meet a 20% reduction in the carbon footprint of Met Park's concrete structures
- Meeting center reuses 70-foot-long timber beams
- Water reclamation and recycling supplies cooling towers, landscape irrigation and flushing fixtures.
 Low-flow urinals, toilets, and lavatories exceed U.S.
 Environmental Protection Agency (EPA) requirements by nearly one-third
- Capture/reuse of rainwater, shower water, and HVAC condensate is projected to meet a 50% water savings below code and recycle 7.5 million gallons per year.





Amazon Met Park Buildings

- Combustion-less Hot Water
- Thermal Energy Storage
- Advanced Energy Metering
- Up to 15% EV Charging/EVSE-Ready

- Natural Forms and Materials
- WaterSense Plumbing Fixtures
- LED Lighting
- Dark Sky Lighting / Bird Safety



Amazon Met Park buildings

Plants and greenery are integrated throughout the inside of the buildings.







Amazon Met Park Buildings

- Met Park has two acres (or 90,000 square feet) of landscaped green roofs with native plantings where visitors and employees alike can find reprieve and connect to nature.
- Landscaping was planned with native and adaptive plantings, including pollinator species.
- The soil is engineered to retain water and promote root growth. Smart and low-flow irrigation systems are optimized to reduce water use.

Sustainable Design Details Stormwater Management & Native Plantings





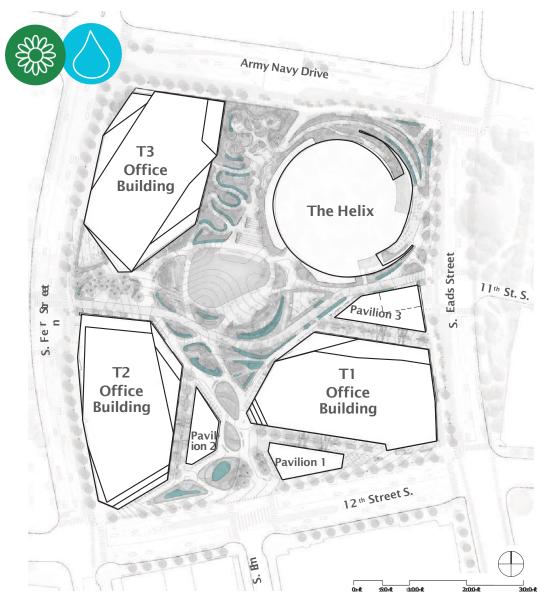






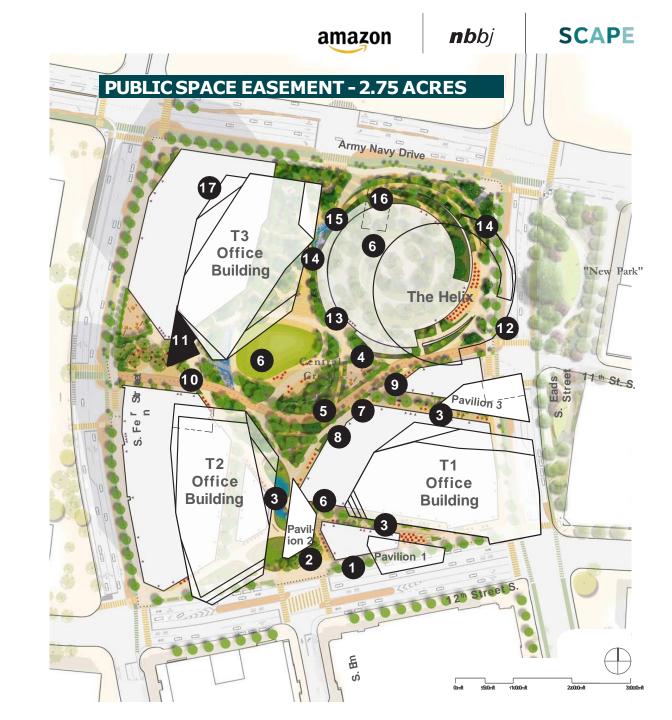






Merging the Public and Corporate Space

- 1 12TH STREET PLAZA
- 2 MEADOW
- 3 RETAIL MEWS
- 4 CENTRAL GREEN
- 5 MARKET PROMENADE
- 6 WATER FEATURE
- 7 FOREST EDGE
- 8 MULTI-MODAL PATH
- 9 DOG RUN
- 10 FERN STREET PLAZA
- 11 CHILDCARE SPACE PRIVATE FACILITY
- 12 EADS STREET PLAZA
- 13 AMPHITHEATER STEPS
- 14 FOREST PATH
- **15 FOREST ROOMS**
- 16 MID-BLOCK STAIR
- 17 ACHS COURTYARD





1. Reduce Overall Load



2. Specify Efficient Systems



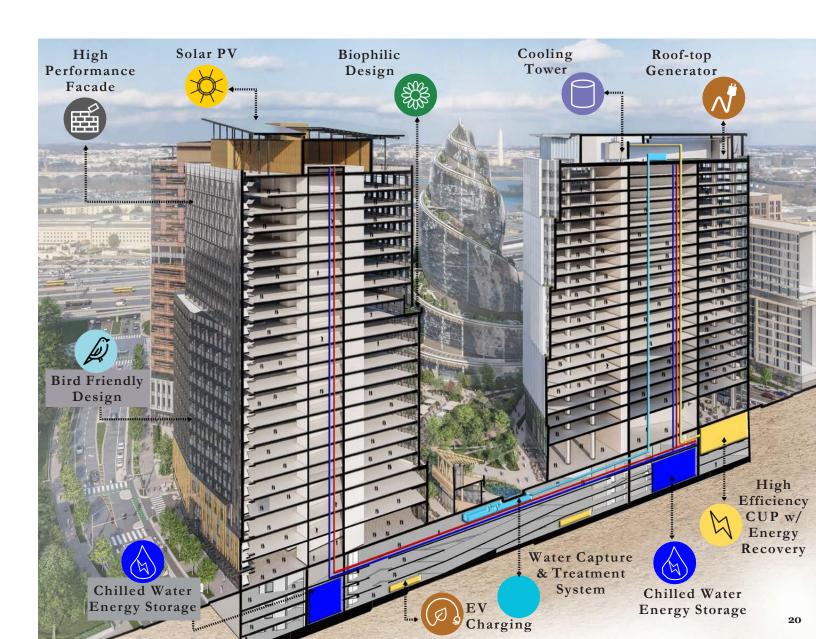
3. Eliminate Fossil Fuels



4. Invest in Renewable On-Site Energy



5. Partner in Renewable Off-Site Energy



Transit-Oriented Development

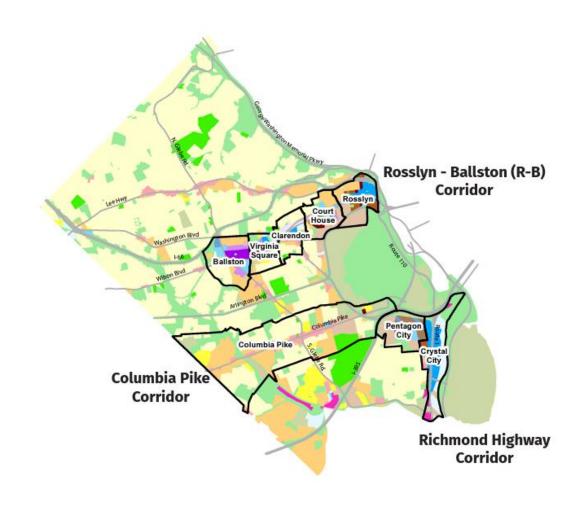
42 million sq. ft. of office space

- 87% in Metrorail station areas with over 6 million sq. ft. of supporting retail and services.
- Rosslyn-Ballston and Route 1 corridors support the County's commercial tax base.

120,000 housing units

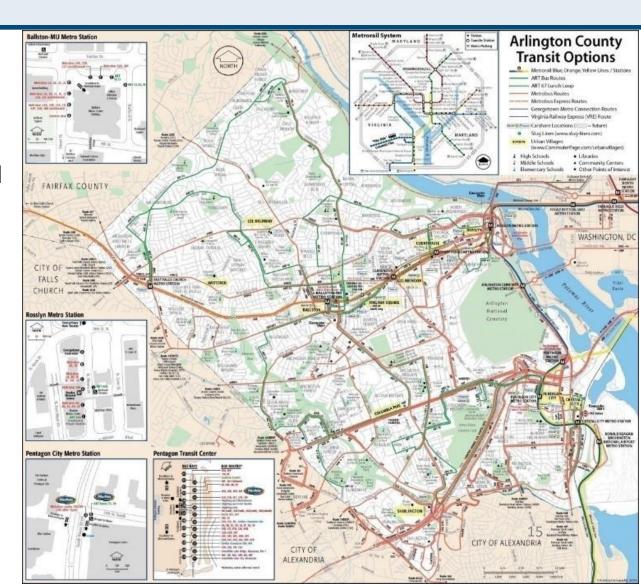
 59% of all housing in established transit corridors.

Facilitated through the GLUP, Comprehensive Plan, and MTP



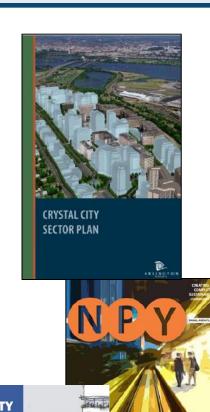
Providing High Quality Travel Options

- 1,100 lane-miles of streets and 19 miles of HOV lanes
- Over 5,500 on-street metered parking spaces
- 12 miles of Metrorail and 11 stations served by 4 rail lines
- VRE commuter rail in Crystal City served by two rail lines
- 16 Metrobus routes and 16 ART bus routes
- 104 Capital Bikeshare stations and 825 bikes
- Over 2,300 shared micromobility devices
- 51 miles of multi-use trails
- Over 40 miles of bicycle facilities
- Extensive network of sidewalks



Overview

- Over the last two decades, Alexandria and Arlington have worked jointly to craft a collective vision for these neighborhoods, transforming them into one cohesive new district through community engagement.
- Both communities have adopted small area and sector plans, crafted by residents and stakeholders, that outline expectations for future growth and investment in each area.
- Amazon selects National Landing for HQ2 Site in November 2018





Crystal City and Pentagon City Sector Plan Highlights

- Balance the Use Mix (office, retail, residential)
- Coordinate at a district scale to complete missing links
- Fill streets and public spaces with people
- Create space for nature and biophilia is an everyday experience
- Provide safe, inviting transportation choices
- Create green ribbon (interconnected system of pathways)
- Advance global standards of sustainable design
- Welcome everyone from throughout the Country, region, and world





Amazon Met Park buildings



- Floating bus islands
- Buffered bike facilities

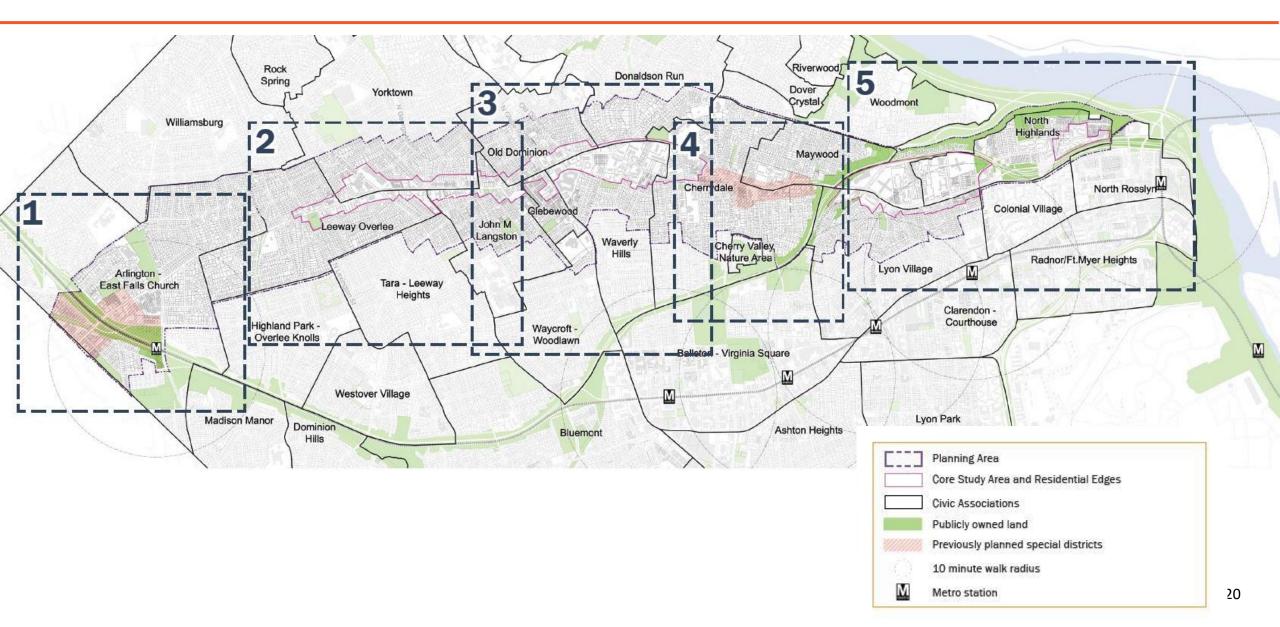


CLIMATE-FACING SUSTAINABLE DESIGN AT THE CORRIDOR SCALE



Neighborhood Areas







Langston Boulevard Vision



Boldly Planning For People and Power of Place 2050 – Resilient, Renewable, and Re-energized

Draft Area Plan envisions **Economic Sustainability**, **Environmental Resilience**, and **Equity** as its foundation:

- reflecting a sustainable and equitable approach to land use planning,
- supporting and strengthening the diverse commercial base,
- leveraging proximity to transit and existing activity centers to reduce travel times and carbon emissions, and
- meeting housing needs of increasingly diverse residents and household types.



Key Planning Elements



Policies and Recommendations for:

Built Environment



Public Realm



Design Principles & Guidelines for Built Environment and Public Realm



Transportation, Connectivity, & Urban Design Framework



Transportation Goal: Transform Langston Boulevard into a 'Complete Street', connect the surrounding neighborhoods and areas to the Langston Boulevard main street, and increase transit use.

- **Creating Complete Streets**
- Completing Pedestrian and Bicycle Network
- **Expanding Street Network**
- **Enhancing Transit**
- **Right-Sizing Parking**

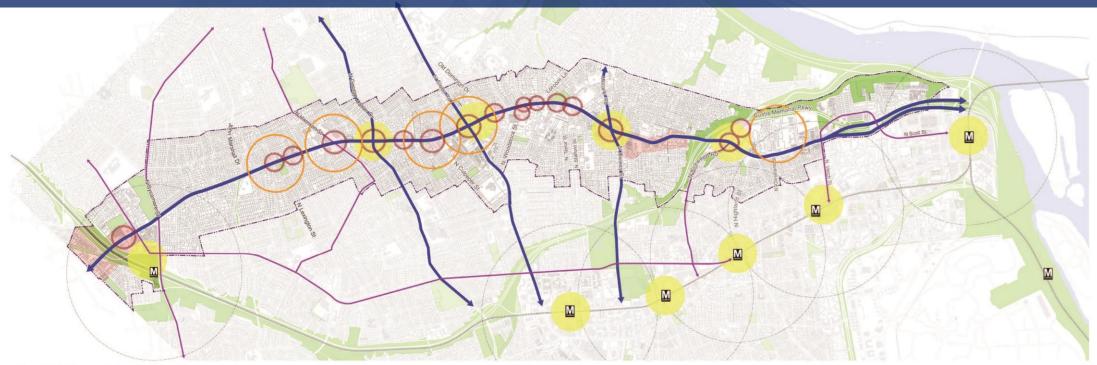


Figure 3.15: Transportation Network Map



Public Space Framework



Public Spaces Goal: Ensure that the Langston Boulevard community is connected to and well served by a diverse mix of public spaces that balance community needs.





Figure 3.26: Diagram depicting approximate locations of desired public spaces



Tree Canopy Coverage and Stormwater Management Framework



Sustainability & Resiliency Goal: Transform Langston Boulevard into a "Green" corridor with street trees, increased landscaping and pervious surfaces, overland relief, and environmentally sustainable and energy efficient buildings.

- Conserving and Expanding Tree Canopy
- Reducing Energy Use and Emissions
- Managing Stormwater and Promoting Water Quality

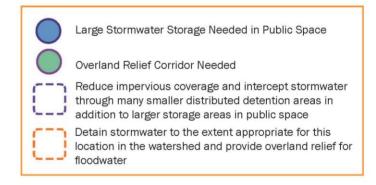




Figure 3.33: Diagram depicting flood risk mitigation concepts



Future Land Use Framework













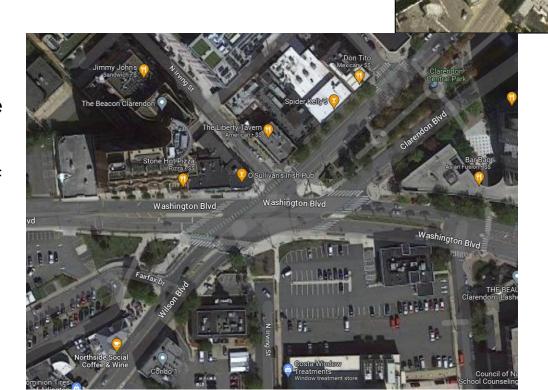


Thank You

Any Questions?

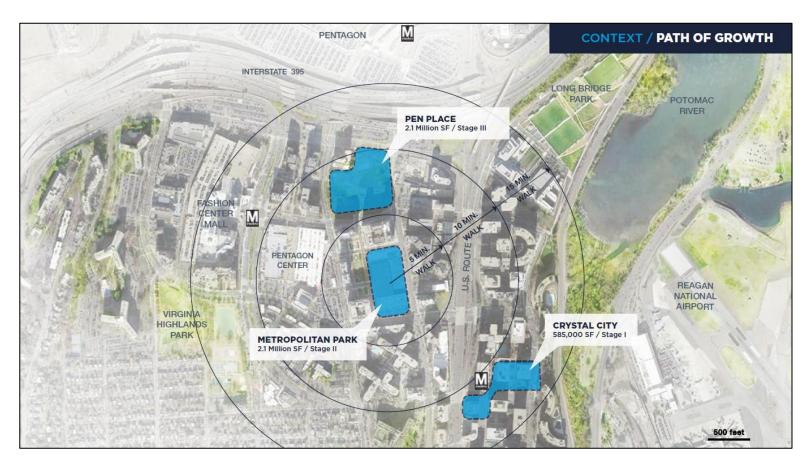
Arlington's Infrastructure Challenges

- 1. First-generation suburb (1930's 1950's) with aging infrastructure
- Limited resources for ongoing maintenance and operations
- 3. Limited right-of-way
- 4. Intensive existing use above and below ground (utilities)
- 5. Multiple demands for use of the right-of-way
- 6. Desire to improve community energy efficiency and storm-water management practices



Amazon's Anticipated Growth

- November 2018 Amazon announced the HQ2 selection
- 4.8M SF of office space

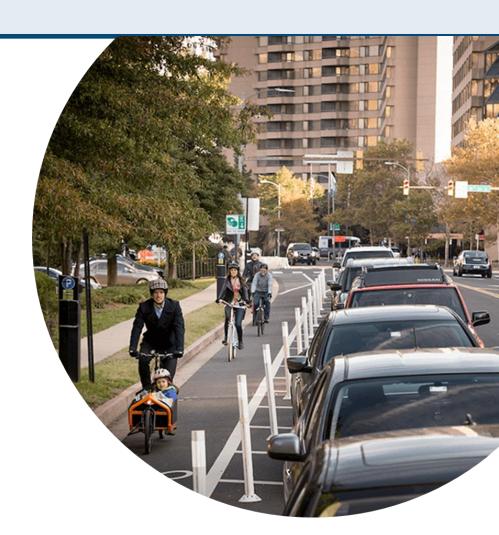


Crystal City/Pentagon City Traffic Data

Changes between 2000 and 2019

- 18% reduction in cumulative Ave Daily Weekday Traffic
- 50% increase in population
- 28% increase in total development GFA
- 24% of households are car free
- 75% of trips made by non-SOV modes

\$270M investment to support multimodal transportation choices in the 2019-2028 CIP



Overview

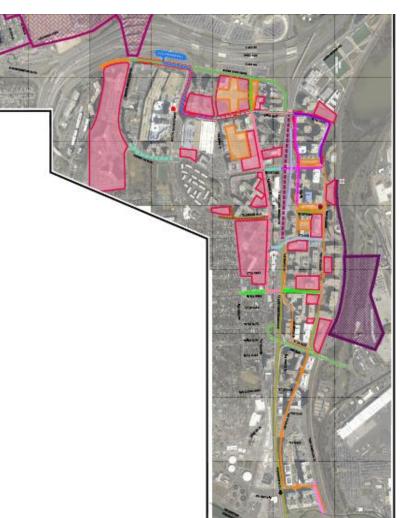
- Improvements to increase and enhance multimodal travel options, pedestrian, bicycle and transit, to support increase in residents, workers, and visitors to the area
- Focus on last mile solutions and connections across travel modes
- Built environment limits the ROW available for improvements
- Reevaluate the area allotted to each use travel lanes, transit lanes, bicycle facilities, sidewalks and green space

Overview

50 Active Projects

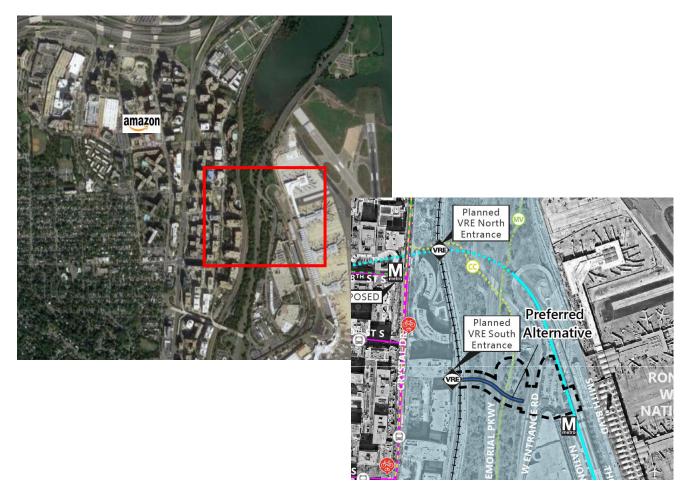
- 26 County Transportation Projects
- 6 County Park Projects
- 18 Private Development Projects
 - 5.5M SF Office Space
 - 5,500 Residential Units
 - 375k SF Retail Space

Extensive coordination required during design and construction



Multimodal Connectivity

- Proposed VRE South Entrance co-located with CC2DCA connection
- Proposed VRE North
 Entrance co-located with
 new Crystal City Metro
 entrance, transitway stop,
 Mount Vernon and Crystal
 City Connector trail



CC2DCA

- Multimodal connection from Crystal City to DCA for pedestrian, bicyclists, and MMDs.
- Currently in the public engagement period for the NEPA Environmental Assessment



Crystal City East Entrance

- Second Metro Entrance for expanded capacity and safety enhancements
- Design coordinated with County street and park project located adjacent to the new entrance.



Amazon Met Park buildings



- Fully protected intersection
- Floating bus islands
- Buffered bike facilities
- Separate bike and pedestrian crosswalks

Amazon Met Park buildings



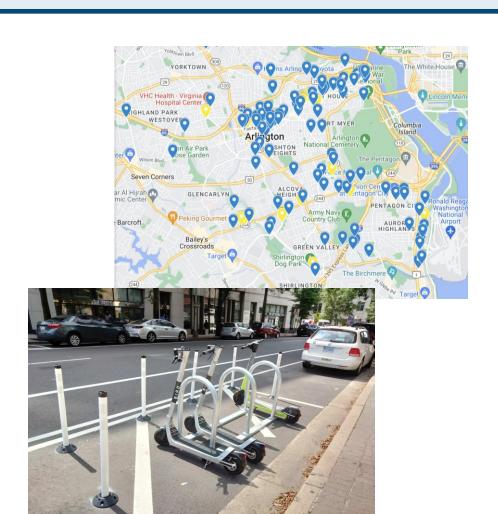
Capital Bikeshare Program

- 4 stations sited at Amazon buildings
- 110 stations in Arlington
- 700+ stations in region, 6,000+ bikes,
 1,500+ e-bikes
- 4,000,000 trips in the past 12 months
- 890 metric tons of CO₂ diverted per year
- Cooperation with six other jurisdictions



Shared Micro-Mobility Devices

- 2,000 e-scooters and 1,000 e-bikes
- 100 parking corrals currently
- 100 new corrals per year
- Each year, vendors must apply to operate
- Evaluation score sheet:
 - Equity Emphasis Areas
 - Master Transportation Plan Goals



Vision Zero

- 2019 County Board adopted a resolution committing to Vision Zero
- 2021 County Board adopted the first 5-year Vision Zero Action Plan
- Increased emphasis on safety during projects design and MOTs for all modes

CORE PRINCIPLES OF VISION ZERO

The core principles in a Vision Zero approach to transportation safety include:



Transportation-related serious injuries and deaths are preventable.



Human life and health are prioritized within all aspects of transportation systems.



Human error is inevitable, and transportation systems should be forgiving.



Safety work should focus on systemslevel changes above influencing individual behavior.



Mitigation of speed is the fundamental factor in reducing crash severity.

WHAT DOES VISION ZERO LOOK LIKE?

Vision Zero implementation may include efforts related to complete streets, speed management, improved signage, curbspace management, and other strategies such as:





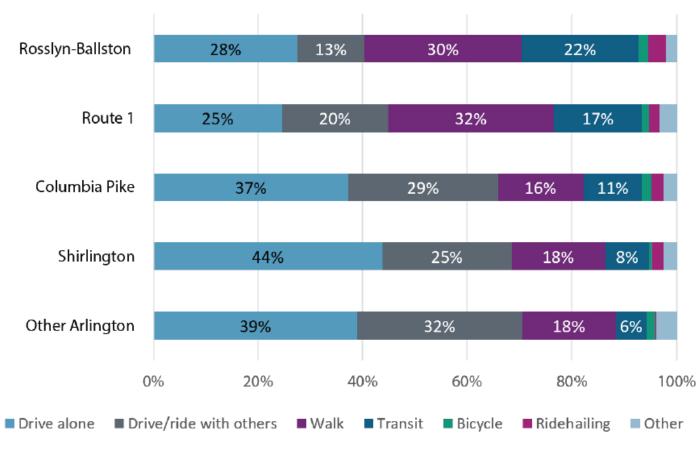


Smart Growth Transformation

- Can communities support increased economic activity and quality of life while reducing reliance on private vehicle travel and associated VMT growth?
 - **Yes -** Transportation infrastructure investments and services must be closely aligned with development and designed to expand viable travel options
- Are there other ancillary community benefits?
 - **Yes** More efficient use of land, reduced environmental impacts, lower energy use, a lower carbon footprint, improved public health

Higher non-SOV use in transit corridors

Mode Split, by Arlington Planning Area



2020 Household Travel Survey

20+ Years of Growth Resulting in Less Daily Traffic

	Daily Traffic Estimates (vehicles)		
	1996	2019	
Langston Blvd. (@ Rosslyn)	37,770	21,000	-44%
Wilson Blvd. (@ Clarendon)	16,368	10,000	-39%
Washington Blvd. (@ VA Square)	20,469	14,109	-31%
Clarendon Blvd.	13,980	9,900	-29%
Glebe Rd. (South of Columbia Pike)	29,000	22,000	-24%
Glebe Rd. (@ Ballston)	35,230	27,000	-23%
Route 1 (North of Glebe Rd.)	52,000	47,000	-10%
George Mason Dr.	20,002	21,000	5%
Arlington Blvd.	55,865	65,000	16%

Expanding Capacity and Enhancing Infrastructure



Crystal City Background





- Prior to 1960, much of the corridor included low density industrial, auto-oriented, and railassociated uses
- Corridor's proximity to Reagan National Airport, the Pentagon, and Washington D.C. helped stimulate much of the earlier growth
- The name "Crystal City" was taken from one of the earlier apartment buildings (Crystal House) where a large crystal chandelier graced its lobby
- Much of the development in the 60's and 70's was stimulated by arrival of large tenants (U.S. Patent Office & Institute of Defense Analysis) along with Metro and Virginia Railway Express (VRE) stations

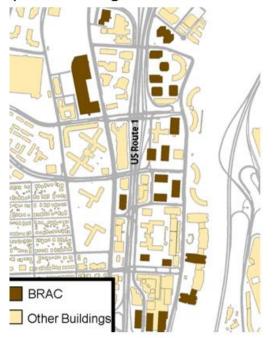
Crystal City Background

- Base Realignment and Closure (BRAC) action of 2005 to decentralize and relocate federal agency offices
- Major impact on Crystal City buildings and jobs in a compressed timeline - estimated
 3.2 million SF GFA (approx. 13,000 jobs)
- High cost of inaction (impacts on office, hotel, retail, etc.)
- Built environment not designed for pedestrians





2005 BRAC (Base Realignment and Closure)

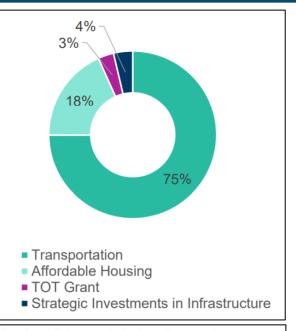


Affects on Crystal City submarket:

- •69 DoD-related leases
- •25 office buildings
- •30% of Office Inventory

Amazon's Investments in the Community

- \$570M in new, expedited and/or enhanced transportation infrastructure and transit improvements
- \$150M in new, affordable and workforce housing (approximately 2,000+ units)
- \$28M in strategic investments in infrastructure (parks, open space and transportation)
- \$23M in TOT Grants for Amazon



Arlington County and City of Alexandria

- State has committed at least \$195 million (for 25,000 new jobs) to invest in transportation projects that will provide robust, multi-modal connections between National Landing and the regional transportation systems. The five projects include:
 - New Crystal City Metrorail Station East Entrance
 - Construction of Southwest Entrance at the new Potomac Yard Metro
 - Pedestrian Connector Bridge from Crystal City to National Airport
 - Route 1 improvements in Arlington County
 - Transitway Expansions throughout National Landing
- Up to \$100M in additional funding would be available if Amazon creates more than 25,000 jobs.

Commonwealth of Virginia

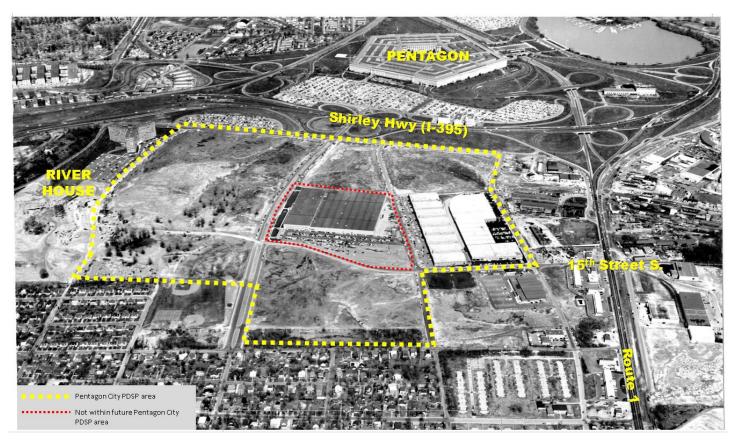
Amazon's Investments in the Community

- Army Navy Drive Complete
 Street Project
- Pentagon City Metro Second Elevator
- Boundary Channel Drive Interchange
- VRE Platform Enhancements
- Regional Trail System



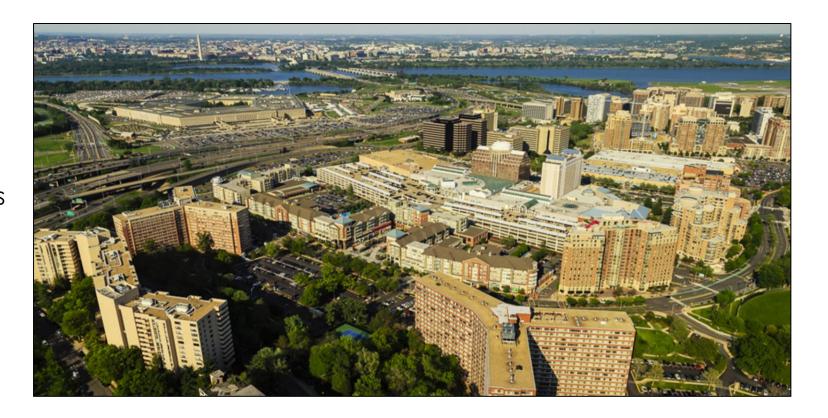
Pentagon City Background

- Originally one large Phased Development Site Plan (PDSP)
- No precedent for Sector Plans at the time
- Single ownership of 116-Acre site at the time
- PDSP used to guide development use, density, use mix, street grid and circulation, height, community amenities
- PDSP amended numerous times affecting the Pentagon City Mall, Westport (formerly Pentagon Row), Metropolitan Park, and PenPlace



Pentagon City Background

- Density allocated within the PDSP is all utilized by existing and entitled developments
- A number of other sites within/adjacent to PDSP are seeking to redevelop and/or add infill development, which will require PDSP amendments to add more development potential



12th Street South and South Eads Street

10 Active Projects

- 5 County Transportation Projects
 - Transitway Segment 1 & 12th St Complete Street Project
 - Transitway Segment 2A
 - S Eads St Phase 1
 - S Eads St Phase 2
- 1 County Park Project
- 4 Private Development Projects
 - Verizon
 - MetPark
 - Private Conduit Installation
 - PenPlace



Squares Block

13 Active Projects

- 5 County Transportation Projects
 - 15th Street South/South Clark-Bell Realignment
 - 18th Street South Realignment
 - Crystal City East Entrance
 - Crystal City Bike Network
 - VRE Station Relocation
- 1 County Park Project
- 7 Private Development Projects
 - Central District Retail
 - 1770 Crystal Drive
 - Private Conduit Installation
 - Crystal City Water Park
 - 1900 Crystal Drive
 - Plaza Landscape Improvements
 - Metro Plaza Improvements



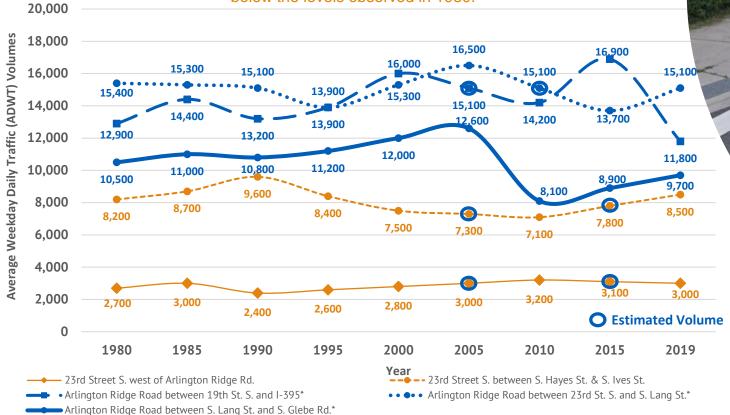
Moving Forward



ARLINGTON COUNTY HISTORIC TRAFFIC COUNT DATA 22202 WESTERN LOCATIONS ARLINGTON RIDGE RD. & 23RD ST. S.

3.2% Below 1980 \$

While development has more than doubled in 22202 since 1980, the average weekday daily traffic volume trend for the locations counted within the single family neighborhoods is below the levels observed in 1980.





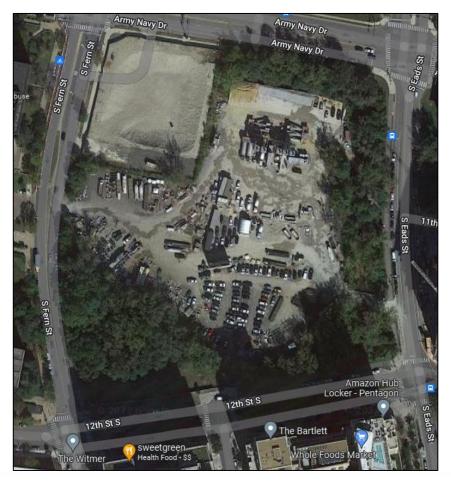
Count Locations

Amazon HQ2 Permanent Office Space



Permanent Office Space (PenPlace)

2021 Site Conditions



Transportation Planning Overview of Improvements

- 4 New Signalized Intersections with New Pedestrian Crosswalks
- Significant Bike & Micro-Mobility Infrastructure
 - Protected Cycle Track, Army Navy Dr.
 - Protected Bike Lanes, S. Eads St. & S. Fern St. (northbound, partial southbound)
 - East/West Multi-Modal Path
 - North/South Through Connections with Bike Runnels
- New 12th Street South Transitway Coordinated with, Led by Arlington County
- Relocated Bus Stop on S. Eads Street, near 11th Street South / New Signal Midblock

2022 Approved Site Plan **GOROVE SLADE** nbbj SCAPE amazon Transportation Planners and Engineers auto / loading entry (aligns with ex. curb cut, below raised landscape) Army Navy Drive Office **Building** The Helix auto entry auto (aligns with ex. curb cut) T1 Office Office Building Building Pavilion 1

Comprehensive Plan - Background

- Guides coordinated and harmonious development through public services and facilities
- The County Board originally established Arlington County's Comprehensive Plan by resolution in 1960 (with five elements)



MTP Goals

- 1. Provide high-quality transportation services for all users and all modes
- 2. Move more people without more traffic
- 3. Promote safety provide transportation system operations that are safe, secure, and enable prompt and effective emergency response
- 4. Establish equity serve the mobility and accessibility needs of all residents regardless of age, income or ability
- 5. Manage effectively and efficiently fund, develop, manage and maintain transportation facilities and services in an equitable and cost effective manner
- 6. Advance environmental sustainability reduce the impact of travel on community resources including are and water quality, and increase energy efficiency

Transportation System Users

Residents

- 234,200 individuals
- 2/3rd work outside County
- 55% use non-SOV as primary commute mode lowest rate outside DC
- 34% of population age 20-34 vs. 9% 65 and over

Employees

- 231,500 jobs
- 3/4 of jobs in Arlington's high-density corridors
- 35% of commuters take transit, walk or bike to work

Visitors

- Over 4 million visitors to Arlington National Cemetery
- Over 11,000 hotel rooms
- Daily visitors from adjacent jurisdictions

Through travelers & commuters



PDSP Evolution Over Time

County-Board Approved Pentagon City PDSP Amendments (which resulted in the reallocation of density or change in use)



Performance Agreement with Amazon



Amazon's decision to establish a major new headquarters in Arlington means thousands of new jobs and an improving economy. Over time, the project will bring the revenue and resources to fund long-term growth in schools, housing and transit.





- Comprehensive Plan
- Crystal City Sector Plan
- · Capital Improvement Plan (CIP)

\$195M from the state to invest in transportation projects in the area

\$2.5 BILLION

AMAZON INVESTMENT IN ARLINGTON FOR HQ2 DEVELOPMENT

By the Numbers

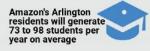
Federal gov't & related jobs in Crystal City & Pentagon City 2000-2020

ast updated: Jan. 9, 2019



15%-20% _____ of Amazon workers are

of Amazon workers are expected to live in Arlington





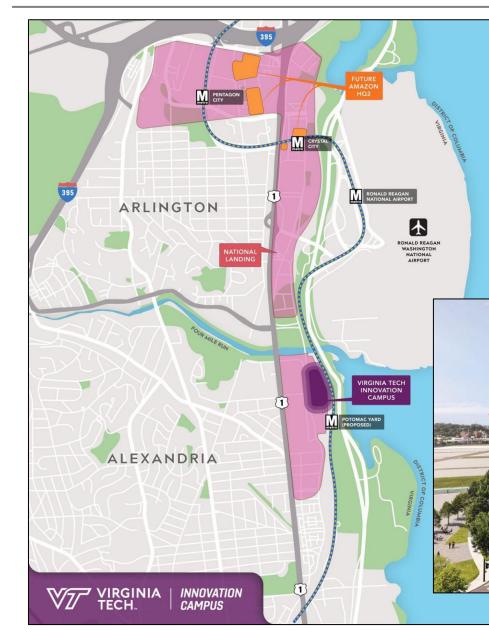
LEARN MORE: ARLINGTONVA.US/AMAZON



Arlington Approves Amazon HQ2 Performance Agreement (March 2019)

- Direct grant payments to Amazon estimated at \$23 million over 15 years
- Source of grant is 15% of incremental growth in County's Transient Occupancy Tax (TOT)
- Annual targets for occupied GFA, up to 6,056,000 SF by 2035
- Estimated \$28 million in strategic infrastructure investments
- Approx. \$420 million in community investments for housing and transportation

VT Innovation Campus – New Location



Virginia Tech Identifies New Location for its Innovation Campus – Just Outside Arlington

- \$1 Billion investment by Virginia Tech
- Part of a 65-acre mixed-use district (replacing existing movie theatre/surface parking)
- Close Proximity to new Metro Stop
- Campus to be completed in phases over the next decade
- Site is also owned by JBG Smith

Future Amazon HO2