SUBMISSION FORM

All submission forms must include the following information. Separate submission forms must be turned in for each eligible program. **Deadline: July 1, 2024.** Please include this submission form with the electronic entry. If you do not receive an email confirming receipt of your entry within 3 days of submission, please contact Gage Harter.

PROGRAM INFORMATION

County: Arlington County

Program Title: Addressing Broadband Service Gaps in Arlington County

Program Category: Community and Economic Development

CONTACT INFORMATION

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SIGNATURE OF COUNTY ADMINISTRATOR OR DEPUTY/ASSISTANT COUNTY ADMINISTRATOR

Name: Mark Schwartz

Title: County Manager

Signature: DocuSigned by: 3B97A255DD9741F... 6/30/2024

Executive Summary

Arlington County conducted an assessment of the broadband market and digital inclusion resources to select and implement appropriate solutions to address the County's digital divide and ensure adequate and affordable broadband access across the County. Led by an interdepartmental staff team, the two-year study included a needs assessment that addressed the current state of the broadband market, digital inclusion programming, and assessed the federal, state, and local tactics and tools currently available and their ability to eliminate any gaps; a comparative model evaluation that analyzed multiple infrastructure and subsidy models; and strategic recommendations supported by case study analysis.

The Study has served as an important educational tool for the County and the community to inform policy and set foundational direction for digital equity and broadband planning. The Study documents a state of broadband and digital inclusion in Arlington comprehensively presented for the first time. Pairing the new property-level FCC data with local property data and customer perception paints a clearer picture of gaps in infrastructure, service, and affordability which has drastically improved Arlington's ability to make informed decisions grounded in data. The method and milestones of the study can offer a model for other jurisdictions how to integrate the large amounts of data into useful information that inform their own digital equity goals.

Although there is no standard or national guidance, this study also attempts to better understand and quantify internet affordability. The innovative methodology and analysis serve as a model for other jurisdictions in Virginia and nationwide to gain a better understanding of its broadband and digital equity need and how best to implement solutions to address the gaps, particularly on the heels of unprecedented federal investment in broadband and digital inclusion and equity where focused and targeted direction will be vital to securing funding.

Problem/Challenge Being Addressed

Arlington County's digital inclusion efforts began in 2017 with the goal of ensuring every county resident has access to Broadband. The County launched a three-year pilot program that provided free wireless Internet to low-income households. To support the initiative, the County provided funds and access to ConnectArlington dark fiber assets. In the following years, the County convened several small scale pilots including a Broadband Advisory Committee, a Digital Equity staff working group, and an external-facing Digital Inclusion Network, each of which evaluated different solutions to improve Internet connectivity and access.

The COVID-19 pandemic paused the strategic planning work to focus on addressing the sudden pressing need to conduct most activities remotely. The County implemented several pilots to provide free connectivity in low-income communities and outdoor hotspots at dozens of community facilities, funded Internet subsidies through affordable housing and schools, offered digital technical assistance for small businesses, and offered training and assistance to residents provided by schools and nonprofit partners supported by County grants. Many of these activities continue post-pandemic.

While the COVID-19 pandemic underscored the importance of affordable, reliable, high-speed internet connectivity, gaps in data left questions about whether Arlington County had an infrastructure issue and to what extent, or whether the gaps were strictly related to household challenges like Internet affordability, knowledge in how to use it, and having the appropriate device to access it. These knowledge gaps and the dozens of options to pursue without a full understanding of their feasibility inhibited policy-making and strategic focus.

Prior to 2022, the Federal Communications Commission did require Internet providers to report coverage data, but the information was shared at the census block level which prevented a complete assessment of coverage and comparisons by property characteristics, particularly important in Arlington

given the varied building typology and characteristics across the County. Furthermore, reporting methods raised concerns of overstated broadband coverage. If an Internet provider served one location in a census block, they could report serving the entire census block. While the available data indicated near-perfect broadband coverage in the County, anecdotally, spotty service was present, but the reason (e.g., infrastructure, router/modem, digital literacy) and scale of the issue was unknown.

Broadband pricing and affordability have been notoriously difficult to study due to a lack of comprehensive data, assorted fees, and varying price-speed tiered structures. Unlike other industries, like housing, no accepted national standard establishes affordable broadband, a challenge when attempting to define the need and associated strategies to support it.

With an objective to further expand broadband accessibility, in 2022, Arlington County pursued a study to assess available infrastructure and digital resources, the nature and extent of Internet service challenges and gaps, and strategic programming or policies the County could deploy towards strengthening or adding tools to ensure quality, affordable broadband Internet, and digital equity across Arlington.

Award Criteria

(Innovation, Collaboration, Customization, and a Model for Other Localities)

Arlington County's Broadband Study meets each of the award criteria. Foremost is its ***innovative*** **analysis**. The County's approach to identify affordability gaps involved analyzing data from various sources, such as the American Community Survey, new property-level FCC data, and the County's own survey and interviews, to measure Internet access, internet subscription and computer ownership rates, and the community's perception of internet service quality and price. Notably, the analysis included a granular assessment of property-level infrastructure data compared to key property characteristics, the application of a speed benchmark that contemplates higher than the national definition of underserved, and assessment of household cost-burden by Internet service without any national benchmark standard.

The County also evaluated a local financial subsidy model that would provide internet vouchers to cost-burdened households, considering different scenarios with and without federal subsidies and bandwidth options. Many jurisdictions have not assessed Internet affordability past promoting federal subsidy programs, such as the Affordable Connectivity Program, which was discontinued earlier in 2024.

The higher-level evaluation of Internet service models was a **customized approach** to inform next steps for the County. While researching other broadband studies nationwide, many were designed as a deep dive feasibility study for a specific model, such as a municipal broadband network; however, the County desired to study several options. To save resources from multiple feasibility studies, the County designed the model evaluation to develop higher-level order of magnitude costs and flag challenges and considerations recognizing that further research could be considered or recommended if the Study analysis warrants it.

The Study process embodied the **spirit of collaboration.** Broadband and Digital Equity activities are often implemented by Technology Departments and can overlook the range of perspectives impacted by digital inequities, particularly the human element. In 2021, Arlington County established an interdepartmental Digital Equity Group to set foundational direction advised by three department directors: Community Planning, Housing, and Development, Technology Services, and Arlington Public Libraries intended to bring a holistic approach to the effort. This group served as strategic advisors to the Study. While the Study was guided by this group, dozens of staff in other departments as well as Arlington County Public School representatives offered feedback and participated throughout the process.

The Study's innovative approach and comprehensive findings serve as a ***model* for other jurisdictions**, especially considering unprecedented federal investments in broadband and digital equity where focused and targeted direction will be vital to securing funding. Arlington is at the forefront of local

broadband planning, particularly given the nuanced research needed to fully understand gaps related to provider competition and Internet affordability. Arlington's use of data and its evaluation methodology serves as a template for other jurisdictions to utilize their own assessment and understanding of broadband and digital equity needs and development of appropriate implementation strategies. Other communities in Virginia have already engaged with Arlington to learn about the Broadband Study process.

How the Program was Carried Out
(Including Financing and Staffing)

Staff implemented the Broadband Study over three distinct phases – a needs assessment, technical analysis of Internet models, and strategic recommendations. Each phase concluded with a report and natural checkpoint to share progress and key findings, allowing for continuous communication with stakeholders and an opportunity to incorporate feedback in future work.

Needs Assessment

The first phase assessed the current state of the broadband market, digital inclusion programming, and federal, state, and local tactics and tools currently available and their ability to eliminate any gaps. The study team conducted a robust and thorough review of available data coupled with perspectives from stakeholders and industry practitioners. The assessment relied on the American Community Survey for computer ownership and Internet subscription by age, income, race, and education level.

In 2022, the Federal Communications Commission (FCC) began requiring Internet providers to report property-level service data, including property type and available speeds. Arlington County executed a license agreement with the FCC's contractor to receive the raw data and publish summary statistics in the report. Once received, the FCC data was analyzed, assessing competition and level of service with two speed benchmarks. The County used both the definition accepted by the federal government as

served (100/20) and the benchmark for new construction projects under the NTIA grant program (100/100). The analysis also compared the FCC data to local property data to research trends related to property characteristics, including type (e.g., multifamily, garden-style, single-family), age of building stock, and affordable housing vs. market-rate.

A survey and stakeholder interviews complimented the data analysis, particularly related to service quality and price, digital literacy, and other topics difficult to glean from data alone. The team received nearly 900 survey responses from residents and businesses and held discussions with approximately 70 stakeholders from a range of perspectives, including government agencies, building landlords and developers, business organizations, Arlington Public Schools, safety net organizations, other nonprofit organizations, and community advocates. All primary Internet providers were interviewed and relevant information regarding their respective broadband networks and service offerings were collected and analyzed.

Model Evaluation Framework

As part of phase two, the study team evaluated infrastructure-based and subsidy-based Internet delivery models under discussion, ranking them for their ability to address the need. The following models evaluated are four of many possible variations and were chosen to help compare high-level organization options:

- *Wireless Service Authority (WSA):* Arlington creates a separate organization with full access to ConnectArlington infrastructure, a fiber-optic, high-speed, dedicated network that links county and school buildings, providing a robust digital services infrastructure. The Authority delivers service and operates the network.
- *Third Party Operator (TPO):* Arlington owns and funds the construction of a network that expands ConnectArlington and delivers dark fiber to underserved locations. Internet providers

use an updated ConnectArlington license agreement with fee schedule to light the dark fiber with their own electronics to provide service.

- *Internet Service Provider (ISP):* A third party expands service into the underserved areas under an agreement with the County.
- *Financial Subsidies for Internet Service:* Evaluates a local financial subsidy that considers federal benefits and bandwidth options.

The evaluation assessed the order of magnitude costs, risks and challenges, and benefits of each model.

The first phase of the Study identified gaps related to provider competition, Internet service affordability, and, to a lesser extent, infrastructure quality. The scale of the analysis was based upon these gaps, using the following criteria:

- **Lack of Infrastructure Quality**: locations that do not have 100/100 broadband access (this includes assumptions of planned provider upgrades shared with the team).
- **Lack of Affordability**: households that are cost burdened— defined as households that spend more than 1.5% of their income towards Internet service/equipment (i.e., router, modem).
- **Lack of Choice/Competition**: locations that have only one Internet service provider at 100/100 or better.

Recommendations and Case Study

Based off the previous two phases of the Study, recommendations were refined and organized into three main strategic themes and the reporting shares budgetary considerations, including some rough order of magnitude costs based upon the current market and best practices. While they are not program estimates, the considerations could be helpful in budgeting for implementing these recommendations as Arlington further fleshes out the concepts proposed.

This phase also highlighted three case studies that provide successful examples of efforts other jurisdictions have made to improve access to broadband in their communities, along with how each could be applicable to Arlington County. A summary of the cases chosen is provided in the attachment.

Staffing

A small interdepartmental core team comprised of one project manager and four staff led the study from start to finish. The core team were the architects of the Study, playing a crucial role guiding the assessment, identifying models and evaluation methods, organizing community outreach, and extensive collaboration on the deliverables and recommendations of the Study. The team represented perspectives from the Department of Technology Services, Community Planning, Housing, and Development, Arlington Public Libraries, and the Real Estate Bureau. The core team also managed and guided a consultant team who brought needed technical expertise related to broadband development, service, and policy.

The core team also coordinated additional input from dozens of County staff from multiple related departments, including Arlington Economic Development, Arlington Employment Center, Department of Human Services, Arlington's Employment Center, Department of Parks and Recreation, Arlington Public Libraries, Department of Technology Services, the Planning and Housing Divisions, Arlington Public Schools, and the County Attorney's Office.

Financing/Resources

Arlington County leveraged American Rescue Plan Act resources to fund the ~$315,000 consultant fees for this multi-phase study. Other than staff time and the use of existing communications platforms, no local resources were used for this project.

Project Results

Each of the three reports produced provide detailed data and context that have assisted in further defining and refining the strategies to achieve the goal of ensuring that every person in Arlington County has the digital capacity to fully participate in society.

1. The *Resource Evaluation and Needs Assessment:* addressed the current state of the broadband market, digital inclusion resources, and assessed the federal, state, and local tactics and tools currently available to eliminate any gaps. The information was comprehensively documented for the first time, breaking down complex technology topics to be more digestible to non-practitioners.

   The analysis of property-level infrastructure data allowed for more granular assessment that had previously been generalized by census-block data and the American Community Survey.

   Given the previous gap in data, past conversations were based around anecdotal information that did not necessarily represent the broad spectrum of needs or desires across the entire County. Survey data and interview conversations provided additional context difficult to glean from data alone - information related to the community's perception of Internet service quality, price, affordability, and digital understanding.

2. The *Comparative Internet Service Model Evaluation*: analyzed multiple infrastructure and cost subsidy models for their ability to improve broadband Internet service access for underserved areas and cost-burdened households within Arlington County. The County benefited from

learning the intricate details of the calculations required to design, execute, construct, and maintain each of the different models. This higher-level approach allowed the County to assess four different models, compare them side-by-side, and subsequently hone the focus of interventions/programs and determine which, if any, warrants future, more in-depth research for feasibility. Without this information, the County could have pursued a costly and complex direction that did not adequately address the issues identified in the needs assessment. Defining Internet affordability has helped quantify the scale and focus of any subsidy program. Former federal Internet subsidy programs did not fully address cost barrier gaps in Arlington County, given the high cost of living in the Northern Virginia region. Based upon national research and our Study, households begin to be "internet cost-burdened" at approximately 50% of the area median income in Northern Virginia. The programs generally only supported households who earn approximately 30% of the area median income and below, leaving a gap, even with the American Connectivity Program (ACP) fully leveraged. Now that ACP is discontinued, the exercise is particularly useful to quantifying a local subsidy to address the community's gap that contemplated multiple scenarios with and without federal subsidies.

3. The *Strategic Recommendations:* detailed recommendations designed to address current and future broadband and digital needs in Arlington County supported by case study analysis. The recommendations were grounded in data-driven analysis and will help hone Arlington's focus through targeted digital inclusion programs, collaboration with Internet Service Providers (ISPs) to expand and upgrade their service, and more intentional governance. The Study provides a strong basis for discussion among County leaders and will lead to dialogue and decisions about the County's objectives related to digital equity and priority of the work compared to other policy priorities.

2024 Virginia Association of Counties Achievement Awards Submission
Addressing Broadband Service Gaps in Arlington County

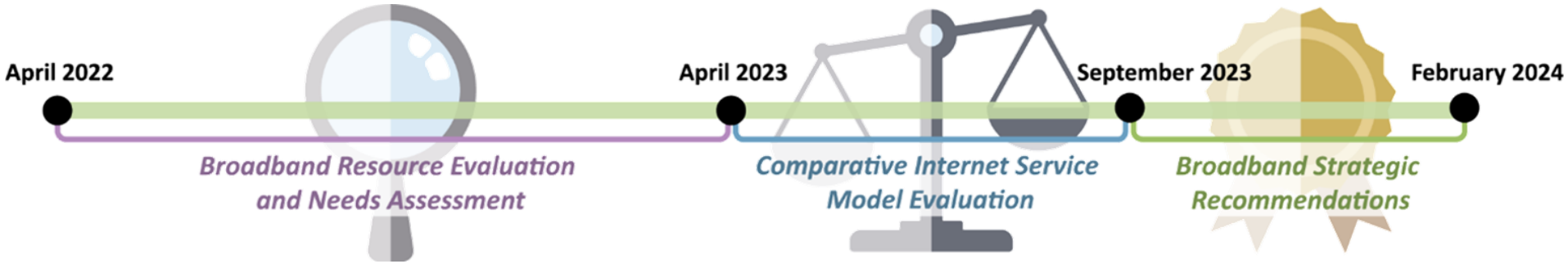
Excerpts from report presentations showing key findings are attached.

Arlington County, Virginia
Broadband Strategic Recommendations

February 2024

TELEVATE strategic networks group advancing economies in a digital world

Project Background



The 2022 Broadband Study sought an independent assessment of broadband infrastructure and digital resources; the nature and extent of Internet service challenges and gaps; and strategic programming or policies to ensure quality, affordable broadband Internet, and digital equity.

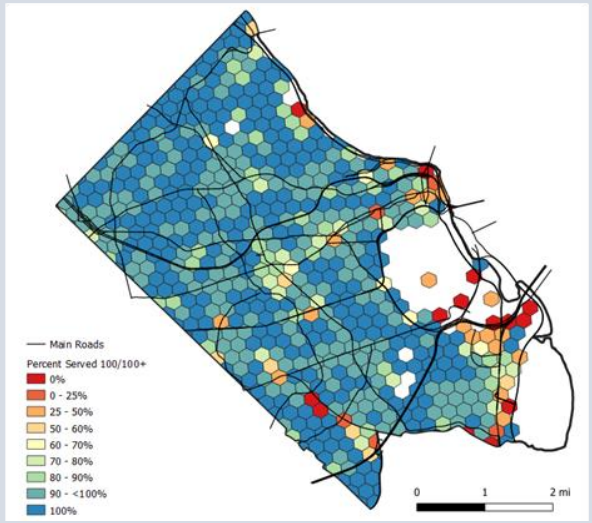
- The *Resource Evaluation and Needs Assessment* addressed the current state of broadband and digital inclusion in Arlington County and assessed the federal, state, and local tactics and tools currently available and their ability to eliminate any gaps.
- The *Comparative Internet Service Model Evaluation* analyzed multiple infrastructure and cost subsidy models for their ability to improve broadband Internet service access for underserved areas and cost-burdened households within Arlington County.
- The *Strategic Recommendations* detail recommendations designed to address current and future broadband and digital needs in Arlington County supported by best practice research.

Arlington's Broadband Marketplace

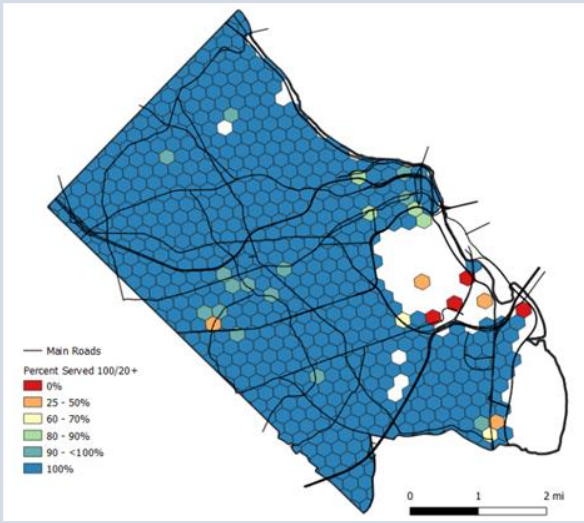
- The study found that lack of quality broadband infrastructure and lack of choice/competition affect a limited number of households
  - 10 commercial companies provide residential Internet to at least 10 locations in Arlington
  - High-quality service of at least 100/20 Mbps is near ubiquitous (99%)
  - Most properties (95%) have choice of at least two Internet providers providing 100/100 or better service
  - Nearly half (44%) have choice of three or more providers
  - Comcast upgraded its Xfinity service in 2023 since the needs assessment analysis. Only 4 locations (covering 159 units) in Arlington County do not have targeted speeds for new infrastructure in the NTIA grant program (100/100)

Number of Providers at Location	100/20+ Locations/Percent Total	100/100+ Locations/Percent Total
0	46 / 0.1%	1,068 / 3.0%
1	1,576 / 4.4%	28,008 / 78.0%
2	18,427 / 51.3%	6,843 / 19.0%
3+	15,885 / 44.2%	15 / 0.0%
Total	**35,934**	**35,934**

Percent Locations Served (>=100/100)



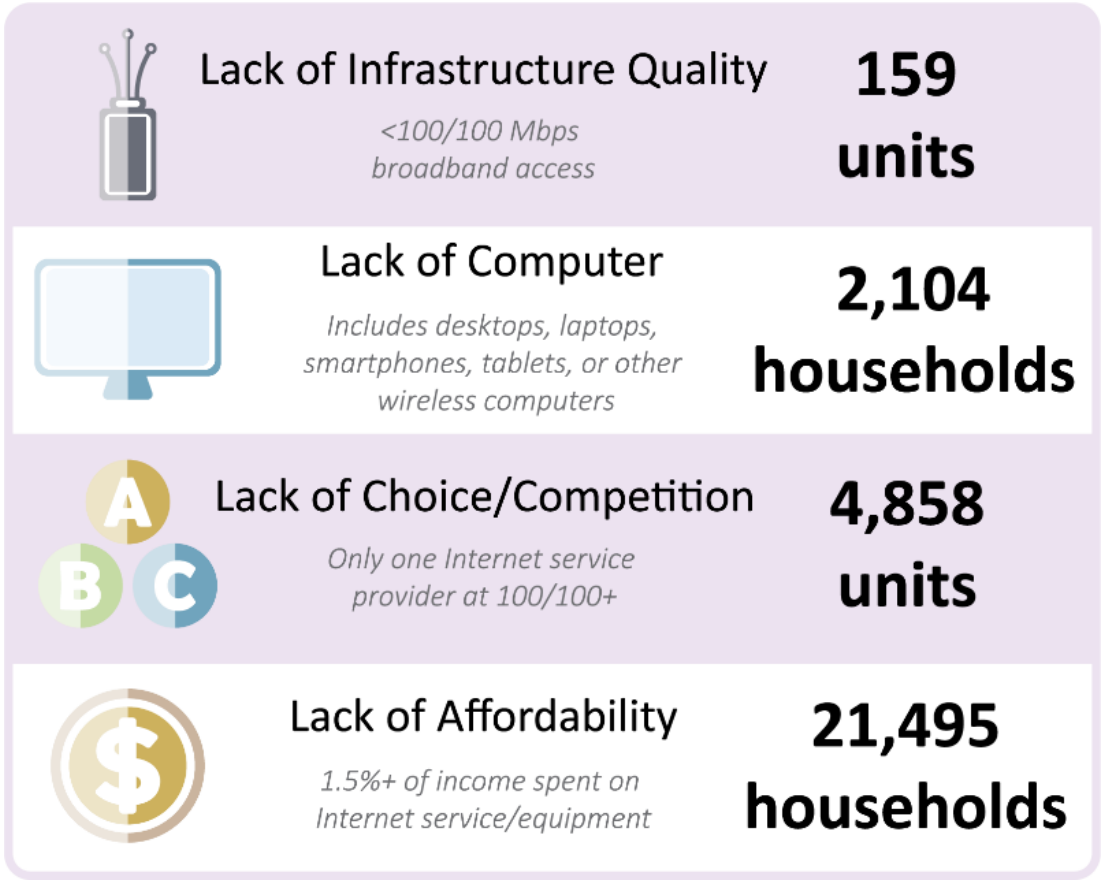
Percent Locations Served (>=100/20)



Source: Broadband Data Collection, Federal Communications Commission. Acquired December 2022. Some analyses discussed in this presentation use more recent data, including ISP upgrades.

Broadband Affordability in Arlington

- Affordability and other digital equity issues are a larger barrier than infrastructure issues.
- While no national standard for internet affordability exists, this study defined “affordable internet” as spending no more than 1.5% of a household's income.
- Using this benchmark, Internet affordability issues impact households earning ~50% AMI and below compared to the average internet package for 100/100 service.



Model Evaluation Summary

- The *Model Evaluation* in the prior phase found that the models assessed did **not** sufficiently address Arlington's needs
  - Infrastructure models do not address the larger issue of affordability challenges
    - Wireless Service Authority and Third Party Operator models fail to generate revenue to cover their cost or subsidize service prices for the cost-burdened community
    - ISP model is dependent on whether ISP offered low-cost service and willingness to enter an already-competitive marketplace
  - The household subsidy model does address affordability issues, but does not address challenges such as language barriers, digital literacy, and outreach to eligible households

Digital Inclusion Recommendations

Strategy 1: Promote Digital Inclusion through Targeted Programming and Expanded Available County Offerings

GAPS

- **Internet Affordability:** 21,495 households pay more than 1.5% of their income towards the average Internet service at 100/100 Mbps
- **Subsidy Participation:** Eligible participation rates (31%) in the ACP program are lower than Virginia (41%) and Nationwide (42%). Even if ACP is fully leveraged, a gap still exists for households earning between 30% and 50% AMI
- **Device Availability:** 2,104 households report not having access to a **personal** computer.* 5,267 households report solely using a smartphone (or tablet or other computer device), which may not be optimal for telework, virtual learning, and other video streaming functions
- **Digital Skills:** Seniors, low-income, and multilingual households have a greater need for awareness and digital skills training
- **Internet Adoption:** 3,654 households in Arlington (3.3%) lack a broadband Internet subscription, with lower rates of Internet and computer availability among seniors and people of color
  - Seniors make up nearly two-thirds of the Arlington population who lack a computer or an Internet subscription despite making up only 12% of the population
- **Scale:** Some positive County programming (related to technical assistance/connectivity), but the scale is not meeting the demand

** "Computer" includes desktops, laptops, smartphones, tablets, other portable wireless computers, and other computers. Source: 1-Year 2021 ACS*

Digital Inclusion Recommendations

Strategy 1: Promote Digital Inclusion through Targeted Programming and Expanded Available County Offerings

RECOMMENDATIONS

- Foster a Network of Multilingual Digital Navigators to Raise Awareness of Resources and Increase Skill-building
- Increase Participation in Subsidy Programs through Outreach and Enrollment Assistance and Advocate for Affordable Internet Service Availability
- Foster a Local Network of Device Recycling, Refurbishment, and Distribution
- Scale Existing County Digital Equity Programming (e.g., Libraries' technical support, Teleconnect, ReLaunch for small businesses, APS digital literacy training) to Meet Demand

What are Digital Navigators?

Trusted guides who assist community members in Internet adoption and the use of computing devices — including home connectivity, access to broadband subsidies, acquiring devices, and digital skills. Navigators can be volunteers or cross-trained staff who already work in social service agencies, libraries, health, and more and who can offer both remote and in-person guidance.

Addressing Arlington's Affordability Challenges

GAPS

Local subsidies would address affordability issues; however, it is not a recommended solution

- Substantial funding would be needed to subsidize the average monthly Internet cost and to develop and manage a new program
- Additional resources would be needed to address other equity issues
- Subsidy support is already available from federal programs to many households and offered to all students who request assistance by Arlington Public Schools
  - Note: ACP stopped accepting applications and may not continue past April 2024 without Congressional approval. Without this subsidy, low-income households are more likely to face affordability challenges.
- Household income is not the only indicator of connectivity in Arlington – digital education is needed for certain households to make meaningful use of Internet access
- No national standard exists related to internet affordability leading to challenging policy-making

RECOMMENDATIONS

- Promote and assist with marketing and enrollment of existing subsidy programs
- Engage with ISPs to promote low-cost plans and expand eligibility to more households
- Adjust broadband incentives for projects funded by County (e.g., AHIF)
- Advocate for broadband to be treated as an essential utility in federal/state housing programs
- Reconsider a local subsidy option if federal programs are discontinued using APS as an implementation model, lower speed tier targets (i.e., 50/10, 100/20), targeting the most vulnerable residents, and scaling up as resources allow
- Continue to research and document internet affordability challenges

Infrastructure Recommendations

Strategy 2: Address Broadband Internet Service Gaps

GAPS

- Limited understanding of why Internet providers are not currently serving properties.
- Limited available tools to address connectivity issues. The Cable Franchise Agreement is one potential, albeit limited, tool.
- Nascent national data in need of further investigation and analysis against Arlington's data.

RECOMMENDATIONS

- Build a database of service gaps and their causes
- Work with property owners and ISPs to encourage competition and reduce economic challenges preventing service

Governance Recommendations

Strategy 3: Establish Broadband and Digital Equity Governance

GAPS

- No plan or policy offering strategic direction
- No dedicated staff coordinating the County's efforts
- Some positive programming related to small business and residential technical assistance, but the scale is largely not meeting the demand
- Modest funding spent on pilot efforts that in many cases did not address the most important need

RECOMMENDATIONS

- Create a policy framework that provides strategic direction
- Use a coalition of stakeholders to inform policy, manage programs, and leverage resources
- Expand resources to advance broadband and digital equity policies and programs

Case Study: Digital Equity in Philadelphia

- Philadelphia developed a plan to achieve digital equity, established a team to create and pursue strategies to support those goals, and fostered an expansive network of public, private, and community-based partners
  - Mayoral priority and clear roadmap
  - Dedicated leadership
  - Digital navigator support
  - Cross-organizational focus
  - External funding and partnerships
- Arlington is well positioned to capitalize on a similarly advantageous situation and should look to Philadelphia as a model
  - Community-based organizations that are already engaged in addressing digital equity gaps
  - ISPs and other private stakeholder organizations with an interest in making Arlington a more digitally inclusive community
  - Staff that are committed to addressing the challenge

Case Study: Ammon Fiber

- Ammon Fiber is a municipality-led broadband service
  - Local Improvement Districts (LIDs) as a “financial tool to assist residents with their fiber investment” to construct a fiber-to-the-premises broadband network
  - City residents fund construction of the network elements (fiber and electronics) through the LIDs
  - City experienced sign-up rates in all LIDs of more than 47%
- High risk associated with securing enough business to maintain positive cashflow means Arlington County is unlikely to successfully pursue Ammon model
  - Arlington has more competition than Ammon, likely reducing signups
  - Arlington has more renters than Ammon, which affects financing: LID process requires the property owner to request service and repay construction costs

Case Study: San Francisco's Article 52

- San Francisco enacted Article 52 to address situations where property managers were excluding new competitive broadband service providers from their multi-tenant buildings
  - Article 52 requires that "[n]o property owner shall interfere with the right of an occupant to obtain communications services from the communications services provider of the occupant's choice."
- Could a right to choose policy help Arlington?
  - Virginia law does not enable the County to enact a similar code
  - If the County receives information regarding substantial property owner barrier issues, Arlington may have more motivation to pursue a similar regulatory code and should share information with the Virginia Legislature to promote and advocate for enabling legislation.
    - If a technical impediment or bulk agreements are the cause, such a code would not help with competition

THANK YOU

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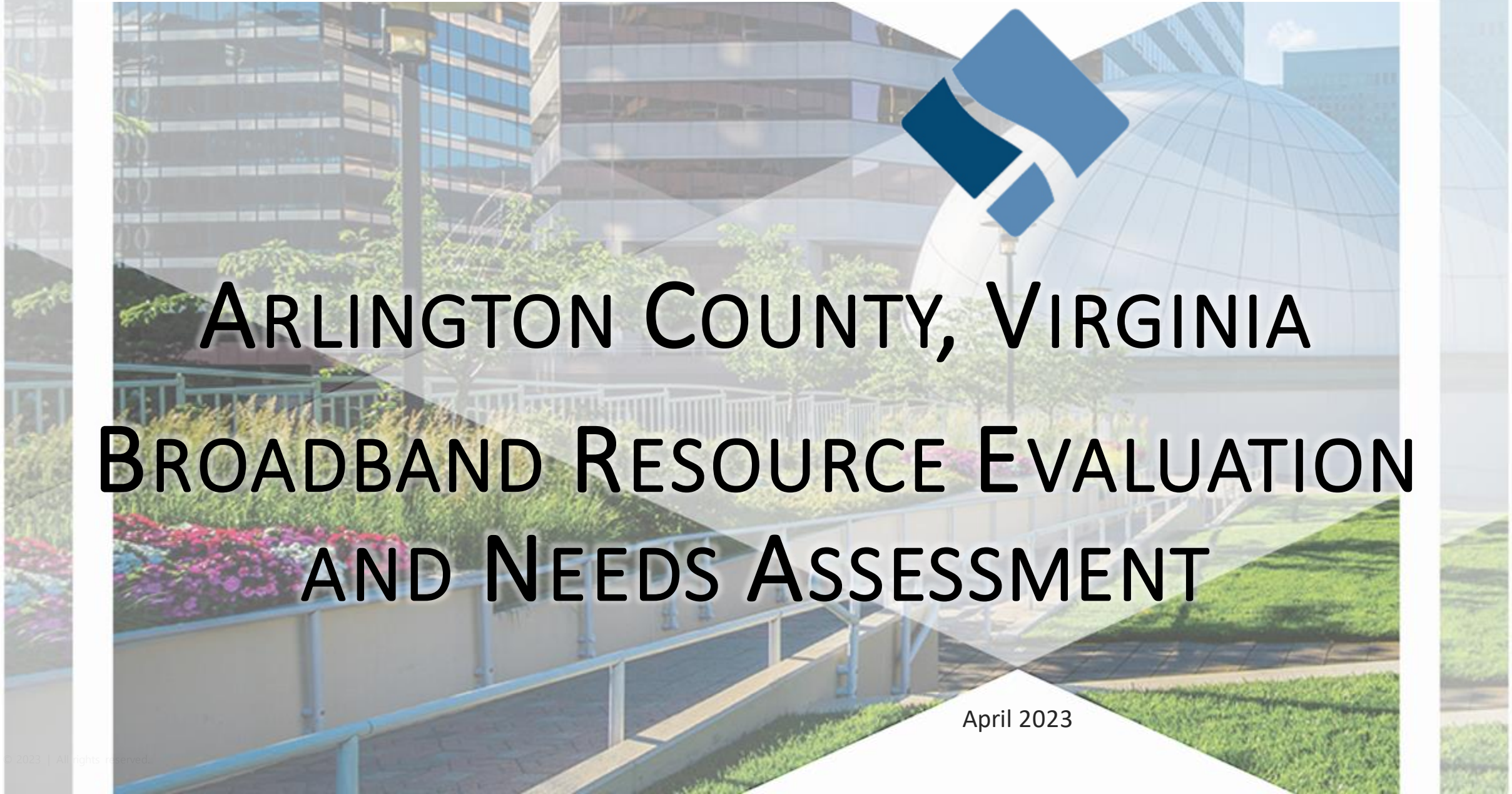


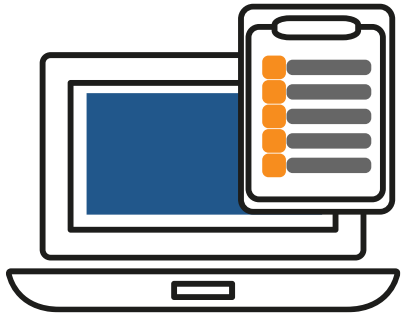
ARLINGTON COUNTY, VIRGINIA
BROADBAND RESOURCE EVALUATION AND NEEDS ASSESSMENT

April 2023

Introduction and Objectives

- Broadband access is critical; the COVID-19 pandemic further highlighted its importance.
- Arlington's vision is for all Arlington residents to have affordable, reliable access to high-speed broadband internet and the necessary devices and technology skills to fully participate in the community and economy.
- The Broadband Study aims to analyze existing broadband resources in order to select and implement solutions to address Arlington's digital divide and ensure adequate and affordable broadband access across the County.
- The *Resource Evaluation and Needs Assessment* addresses the current state of broadband and digital inclusion in Arlington County and assesses the federal, state, and local tactics and tools currently available and their ability to eliminate any gaps.

Data Elements



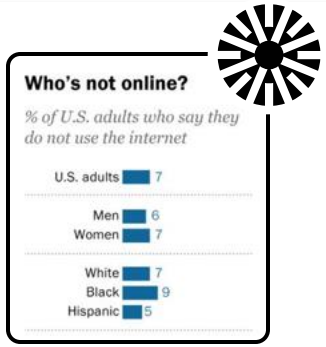
eCheckup Assessment

	Broadband Subscriptions	Households with Computers
Arlington	93.1%	96.6%
Virginia	87.6%	93.4%
U.S.	87.0%	93.1%

American Community Survey (ACS)

FCC Broadband Data

Stakeholder Interviews

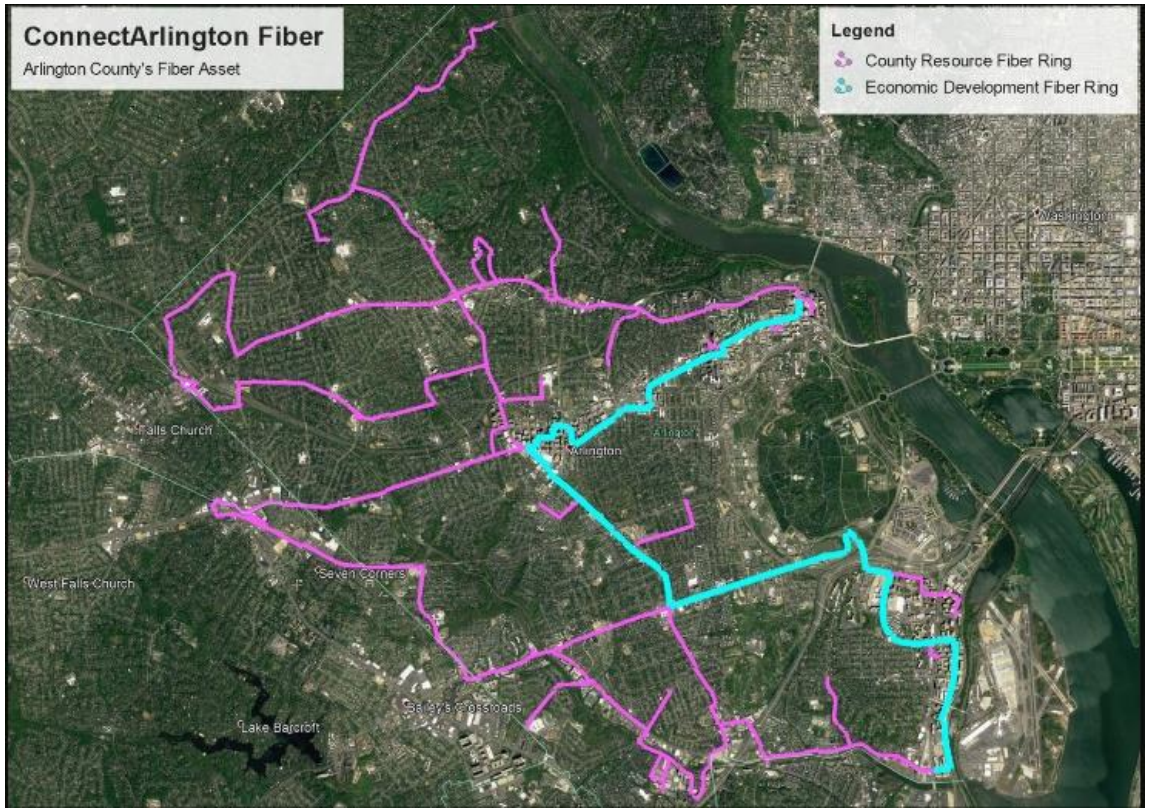


Other National Research

Master Housing Unit Database (MHUD)

ConnectArlington

- Primary function: primary telecommunications infrastructure to connect County buildings, schools, libraries, and other municipal uses.
- Arlington markets ConnectArlington as a resource available to private telecom businesses as a middle-mile resource.
- Existing telecom providers already have extensive broadband resources in the County.
- A new entrant that lacks a substantial footprint may opt to leverage the ConnectArlington assets.



Service in Arlington

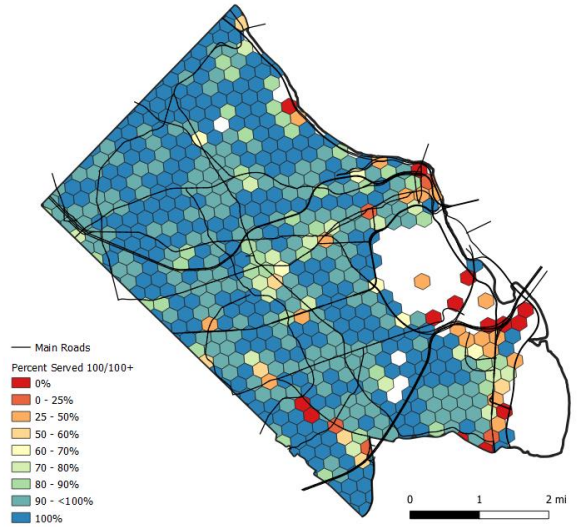
- High-speed broadband service is widely available in Arlington, with ubiquitous service in over 95% of the serviceable area.
- Inadequate service is predominately in areas of Arlington with low building densities.
- The Rosslyn-Ballston, Richmond Highway, and Columbia Pike planning corridors are all well served at similar rates as the rest of the County.

Number of Providers at Location	100/20+ Locations/Percent Total	100/100+ Locations/Percent Total
0	46 / 0.1%	1,068 / 3.0%
1	1,576 / 4.4%	28,008 / 78.0%
2	18,427 / 51.3%	6,843 / 19.0%
3+	15,885 / 44.2%	15 / 0.0%
Total	**35,934**	**35,934**

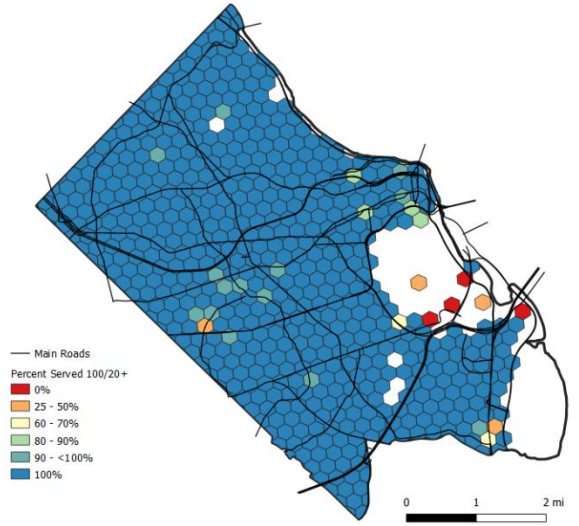
Broadband Speed and Quality

- Over 99% of Arlington County's serviceable locations have high speed broadband access of 100/20 or more.
- Only 46 locations in Arlington are underserved and do not have access to service with federally designated speed levels out of 35,934 locations.
- Once Comcast upgrades its Xfinity service in 2023, only 83 locations in Arlington County will not have broadband speeds designated as the target speeds for new infrastructure in the NTIA grant program (100/100).
- Commercial buildings made up the largest quantity of underserved locations, have a much greater frequency of service below 100/20 (3.6%), and only 53% had 100/100+ service.

Percent Locations Served (>=100/100)

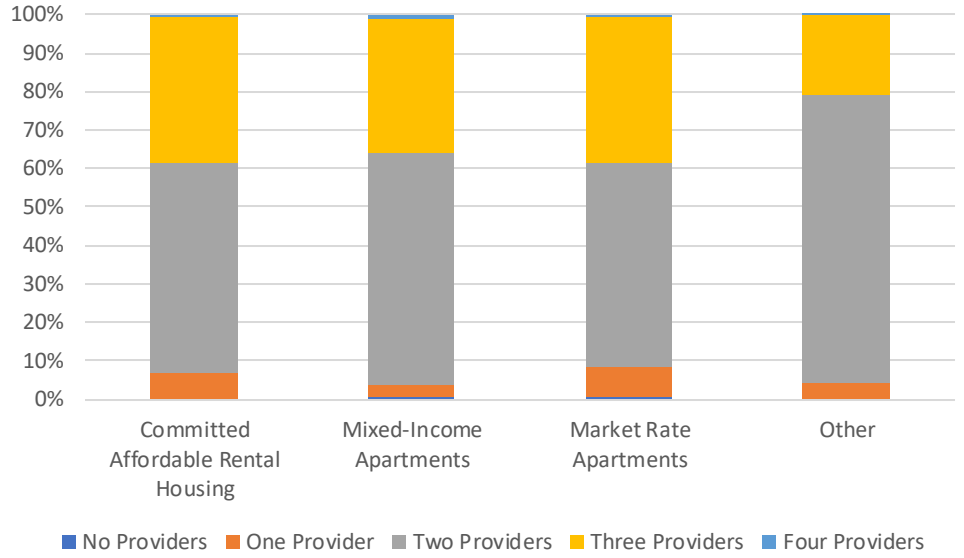


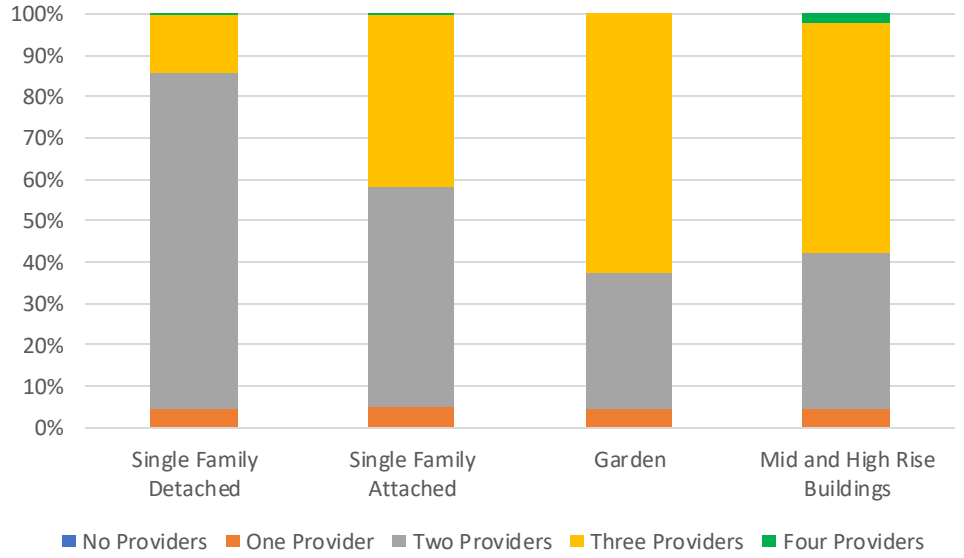
Percent Locations Served (>=100/20)



Broadband Choice

- Over 95% of Arlington County's serviceable locations have competition (more than one ISP) at the 100/20 Mbps service level today, and at 100/100 Mbps by mid-2023 when Comcast upgrades its infrastructure.
- Affordable housing locations are equally as likely to have broadband choice (i.e., more than one provider) compared to market rate, mixed, and other locations.
- Garden and mid- and high-rise buildings have a higher frequency of competition among internet service providers.
- The Cable Franchise Agreement requires the franchisee to serve all locations, unless property owners/managers do not provide access rights – the County should ensure compliance by the franchisee to serve all locations.





Racial Equity

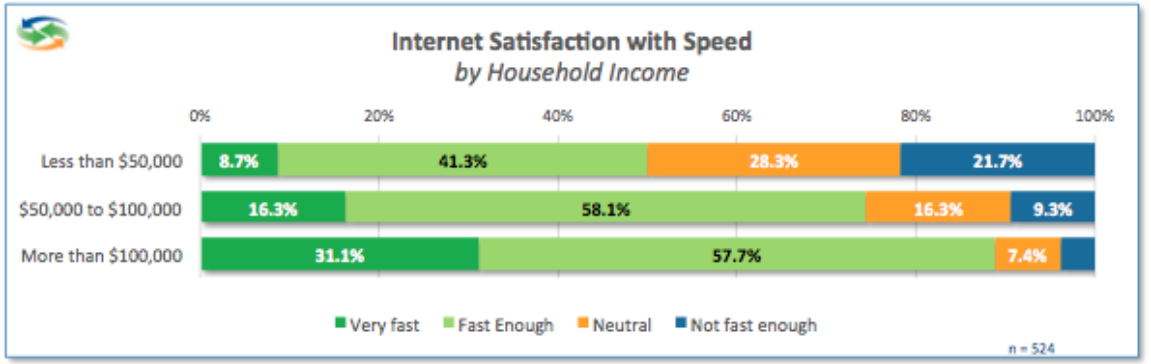
- Affordability challenges disproportionately impact Arlington's BIPOC and ESL households where the proportion with annual household incomes below $50,000 is two-three times that of White households.

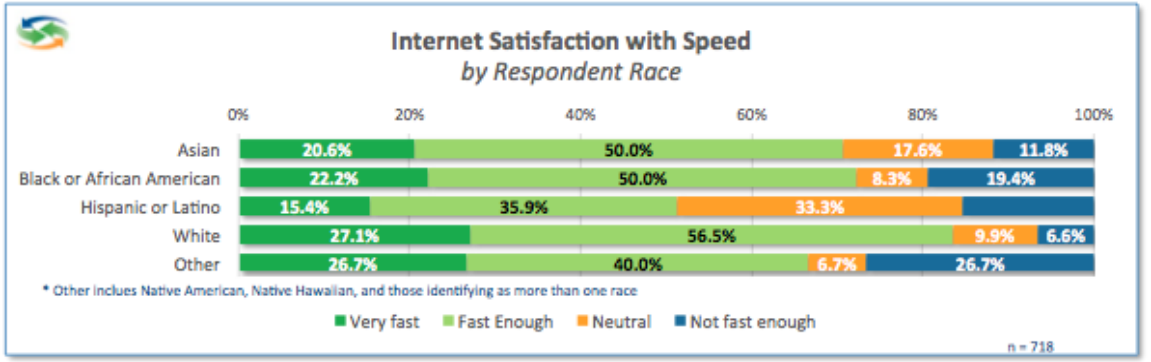
	% Pop.	Population % w/o Computer	Population % w/o Broadband	% Unemployment	% Poverty	% < than BA/BS	% Households Limited English	Population % with Disability
Arlington County	100.0	3.4	5.3	2.9	7.9	23.7	8.0	3.7
White	58.5	1.6	3.4	2.2	4.1	17.5	4.6	6.1
Black/African American	8.5	5.8	10.5	5.0	12.0	49.8	5.9	10.1
Asian	11.4	1.5	5.7	3.9	12.2	22.5	20.3	4.7
Multi-Racial/ Combined	5.9	3.4	11.3	3.5	10.6	53.4	23.0	7.7
Hispanic/Latino	15.7	4.2	11.5	4.1	10.4	55.3	25.3	5.3

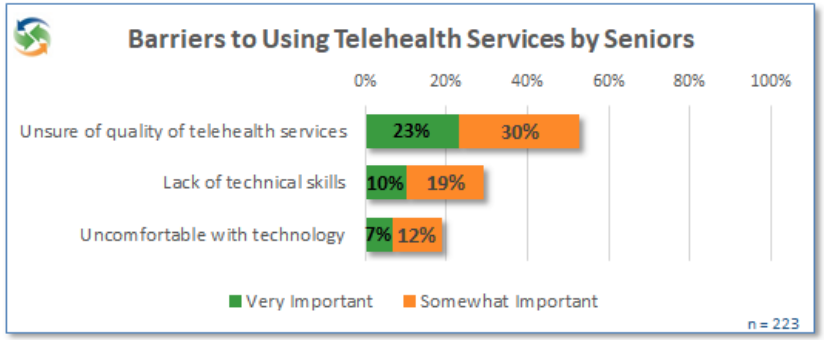
Importantly, national data shows that differences in internet use by White and Black populations disappear when income and educational attainment are held constant.

Underserved

- Arlington households have signed up for the Affordable Connectivity Program (ACP) broadband subsidy at a lower rate than the national rate and the rate in Virginia.
- There remains enormous opportunity to leverage the subsidy programs to bring improved Internet service and possibly address device gaps through coordinated outreach and registration campaigns conducted in partnership with community action organizations serving low-income populations.
- The eCheckup found that participating seniors' biggest barriers to using telehealth were that they were "Unsure of quality of telehealth services," followed by "lack of technical skills."







Digital Inclusion Activities

- A variety of community-based organizations are engaged in programs that address digital gaps, but these are targeted efforts with limited outreach and scale.
- Digital Literacy programs offered by community organizations that are already supporting vulnerable populations and businesses show successful engagement and rely on continued support from the County to address the scale of these challenges.
- Stakeholder organizations that participated in interviews reported that there are not enough devices to serve community members. There are several options for providing devices that exist and need to be explored further.

Digital Inclusion Programming Strengths

- Affordable housing effort to provide in-unit Wi-Fi for residents.
- Library and Parks and Recreation offering access to computers and digital literacy training programs.
- Arlington Public Schools found home internet solutions to 100% of student requests (Comcast Essentials, hotspot access).
- BizLaunch has been successful with programming to support small business start-up transition to digital economy. Needs support to grow to meet high demand for services.

Digital Inclusion Programming Gaps

- Shortage of devices (tablets, laptops, Chromebooks, etc.) is prevalent in community among residents and stakeholder organizations
- Scale is missing in Arlington County so that these digital literacy and business support services are available to all of those in need in Arlington County.
- With limited exceptions, free public access is physically convenient to most residents in Arlington County but may be limited in availability evenings and weekends when facilities close.
- A common digital equity policy framework would more optimally facilitate the County's decision-making and priority-setting efforts regarding broadband and digital equity.

Next Steps

- *Model Evaluation* will examine the options and the associated implementation and cost models to address the underserved broadband infrastructure locations and digital inclusion communities identified in the *Resource Evaluation and Needs Assessment* report.
- *Strategic Recommendations* will detail a list of recommendations and supporting actions to ensure reliable, affordable broadband for the community's needs and to further the County's digital equity goals.
  - Includes policy changes, partnerships, staffing resources, and the funding required to achieve the County's desired broadband and digital equity objectives.

THANK YOU

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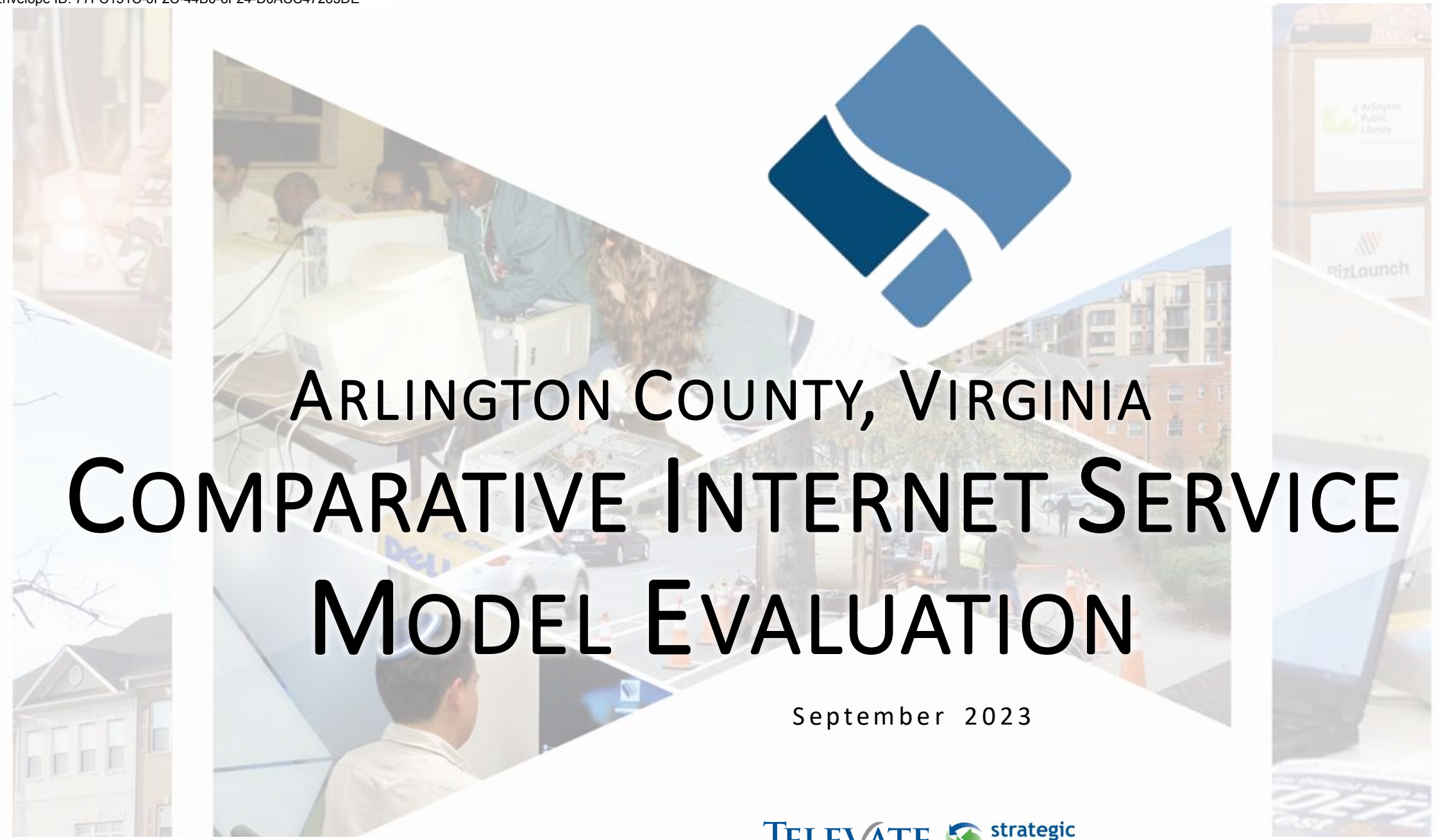


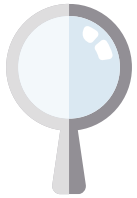
Arlington County, Virginia
Comparative Internet Service Model Evaluation

September 2023

TELEVATE strategic networks group

Evaluation Overview

Arlington County's Broadband Study aims to assess available broadband and digital inclusion resources, evaluate resident and business needs, explore broadband delivery models, and identify strategies for increasing broadband resources and furthering Arlington's digital equity goals.



The *Resource Evaluation and Needs Assessment* report addressed the current state of broadband and digital inclusion in Arlington County and assessed the federal, state, and local tactics and tools currently available and their ability to eliminate any gaps.

The *Comparative Internet Service Model Evaluation* report analyzed multiple infrastructure and cost subsidy models for their ability to improve broadband Internet service access for underserved areas and cost-burdened households within Arlington County.

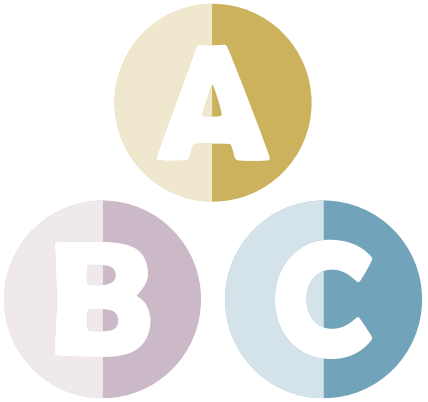
The *Strategic Recommendations* will detail a list of recommendations and supporting actions to ensure reliable, affordable broadband for the community's needs and to further the County's digital equity goals.

Scale of the Problem

Lack of Infrastructure Quality

159

units



Lack of Choice/ Competition

4,858

units

Lack of Affordability

21,495

households

Internet Delivery Models

- **Wireless Service Authority (WSA)**: Arlington creates a separate organization with full access to ConnectArlington infrastructure. The Authority delivers service and operates the network.
- **Internet Service Provider (ISP)**: A third party expands service into the underserved areas under an agreement with the County.
- **Third Party Operator (TPO):** Arlington owns and funds the construction of a network that expands ConnectArlington and delivers dark fiber to underserved locations. Internet providers use an updated ConnectArlington license agreement and fee schedule to light the dark fiber with their own electronics to provide service.
- **Financial Subsidies for Internet Service**: Evaluates a financial subsidy as an Internet delivery model that considers federal benefit and bandwidth options.

These models are four of many possible variations and were chosen to help compare high-level organization options.

Model Strengths and Weaknesses

		Major Strengths	Major Weaknesses
Infrastructure Models	Wireless Service Authority (WSA)	• Full control over infrastructure and service	• Substantial losses over 25 years of operations, never becomes profitable • Extensive construction cost risks • Substantial revenue and cash flow risks including revenue per user and limited subscription take rates
	Third Party Operator (TPO)	• Full control over infrastructure • Operating costs limited to fiber network repair	• Substantial losses over 25 years of operations, never becomes profitable • Extensive construction cost risks • Large revenue risks (shared with retail provider) limited by the size of the underserved market and limited subscription take rates • Risk of securing retail Internet provider
	Internet Service Provider (ISP)	• Limited cost or risk to Arlington County • ISP cost structure lower and more capable of offering lower prices to consumers	• Limited influence over ISP to offer service to desired locations • The incentive from the County is unknown and will need further discussions with ISPs and a policy and legal review • No influence over ISP services (e.g., data speeds and future upgrades) in the marketplace
Financial Subsidy Model		• Cost estimates to facilitate delivery of Internet service to residents at given speeds • Subsidy is applied only to those households that are identified as cost burdened	• Using an expensive internet service cost as the reference for the subsidy calculation does not account for competitive pricing and service level options • A variable subsidy would be complex to implement

Model Grading

Model	Lack of Affordability (21,495 Households)	Lack of Choice/Competition (4,858 Units)	Lack of Infrastructure Quality (159 Units)
WSA	F	D-	D-
TPO	F	D	D
ISP	F	C-	C-
Subsidy	B	N/A	N/A

- Ratings include factors such as:
  - The **overall cost** to Arlington County,
  - The **planning and implementation risks** associated with the model, and
  - The likelihood that the model would **address the need**.

Model Grading

Model	Lack of Affordability (21,495 Households)	Lack of Choice/Competition (4,858 Units)	Lack of Infrastructure Quality (159 Units)
WSA	F	D-	D-
TPO	F	D	D
ISP	F	C-	C-
Subsidy	B	N/A	N/A

Lack of Affordability

- WSA and TPO fail to generate revenue that covers their cost, much less excess revenue to subsidize service prices for the cost-burdened community.
- The ISP model does generate sufficient cash that could be utilized to subsidize the cost-burdened. The ISP **might** be compelled to offer low-cost services to the cost burdened community if they opt to serve the low-income community.
- The Subsidy model is preferable for solving affordability challenges, though access challenges extend beyond finances, such as language barriers, digital literacy, and outreach to eligible households.

Model Grading

Model	Lack of Affordability (21,495 Households)	Lack of Choice/Competition (4,858 Units)	Lack of Infrastructure Quality (159 Units)
WSA	F	D-	D-
TPO	F	D	D
ISP	F	C-	C-
Subsidy	B	N/A	N/A

Lack of Choice/Competition and Lack of Infrastructure Quality

- The WSA and TPO models are costly solutions to address properties with a lack of choice and lack of infrastructure quality.
- The ISP model does not have the same financial risks, as internet providers can leverage existing capital and operational investments in the County. However, it does not necessarily allow the County's input and the likelihood that a new ISP will enter the competitive Arlington marketplace is low. Additionally, due to unknown contributions of the County, there are risks associated with securing the participation of an ISP.

Infrastructure Models: Financial Analysis

Summary of Financial Sustainability of WSA, TPO and ISP Models, including Arlington County's net financial impact from managing a new ISP

Model	WSA	TPO	ISP	
Perspective	Arlington	Arlington	ISP	Arlington
Cumulative Cashflow Over 25 years (millions)	($59.2)	($17.4)	$117.7	($4.8)
Years 20-25 average cashflow (millions)	$0.7	$1.1	$8.8	($0.3)
Total Funding (millions)	$128.1	$76.9	$100.8	$0.0
Working Capital Funding (millions)	$55.0	$28.0	$16.0	$0.0
Sustainable	No	No	Yes	No

Subsidy Cost Analysis

Subsidy Cost Model	Model Service Subsidy Cost	Households Receiving Model Service Subsidy*
100/100 Mbps with Full Federal Subsidy Uptake	$321,233/month ($3,854,804/year)	18,755
100/100 Mbps with No Federal Subsidy Uptake	$750,092/month ($9,001,098/year)	21,495
100/20 Mbps with Full Federal Subsidy Uptake	$141,069/month ($1,692,827/year)	8,541
100/20 Mbps with No Federal Subsidy Uptake	$162,155 /month ($1,945,854/year)	12,485

** Includes households that are cost-burdened – they spend more than 1.5% of their income towards the cost for internet service.*

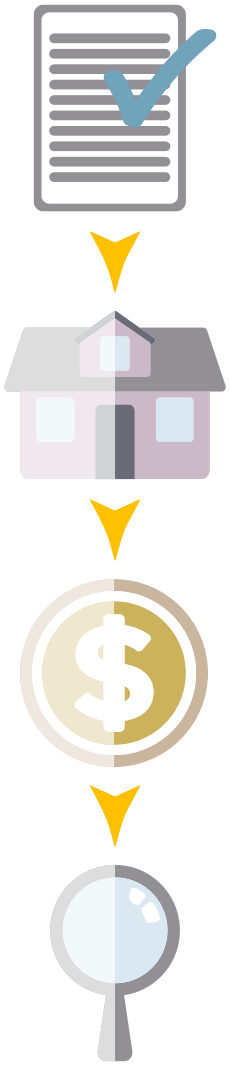
Additional Considerations: Infrastructure

Arlington County Policies/Decisions to Make Prior to Financing/Construction

- Evaluate risks and benefits presented in the model evaluation
- Any preliminary efforts to create a Wireless Service Authority entity or approve a project for the specific model

Program Planning and Development

- Identify the specific locations of cost-burdened households
- Detailed engineering and budgeting
- Vendor research and other planning efforts to create more accurate budget to mitigate construction and cost related risks
- Detailed market research to determine where to construct the network



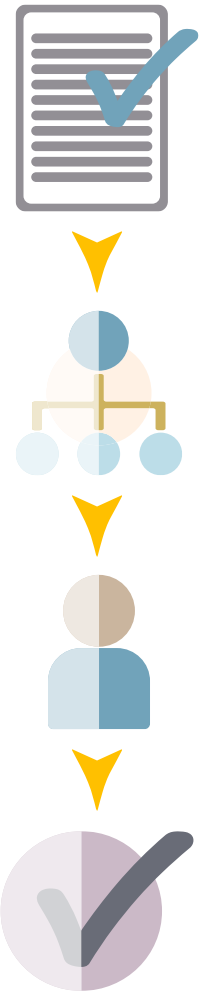
Additional Considerations: Financial Subsidy Model

Arlington County Policies/Decisions to Make Prior to Financing/Construction

- Evaluate risks and benefits presented in the model evaluation
- County decision including population scale, speed tier target and interplay with federal subsidy programs

Program Planning and Development

- Create an administrative structure to oversee subsidy management
- Hire or reassign staff
- Create eligibility verification systems

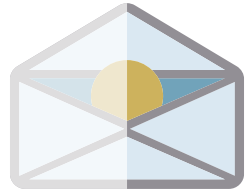


Implementation Considerations

Infrastructure

- Staffing
  - WSA: Max – 15; Steady State – 13
  - TPO: Full engineering and PM; 1 throughout operational period
  - ISP: ISP would staff; 1 Arlington County FTE to manage ISP
- Phasing
- Financing/Sustainability

Financial Subsidy



- Staffing
  - Administration, resource coordination, dependencies on program delivery partners
  - May include multiple departments (policy, program management, financial oversight)
- Stakeholders/Partnerships could support the subsidy program and reduce the administrative and financial burden on the County
- Grant Program Funding
- Sustainability

Next Steps: Strategic Recommendations

- Strategic Recommendations to be Delivered in Fall 2023
  - Informed by the needs assessment and model evaluation reports
  - To include both broadband infrastructure and digital-inclusion focused recommendations and case study analysis
  - The report will address the timeframe, staffing, partnerships, and funding for the strategic recommendations as applicable
  - Recommendations and supporting actions will guide the delivery of reliable, high-speed, and affordable broadband services to underserved communities and to further the County's digital equity goals

THANK YOU

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