

Mathews County Virginia

Community Broadband Survey Update
February 2020

Prepared by The Center for Innovative Technology
Powered by Mathews County Virginia



Topics

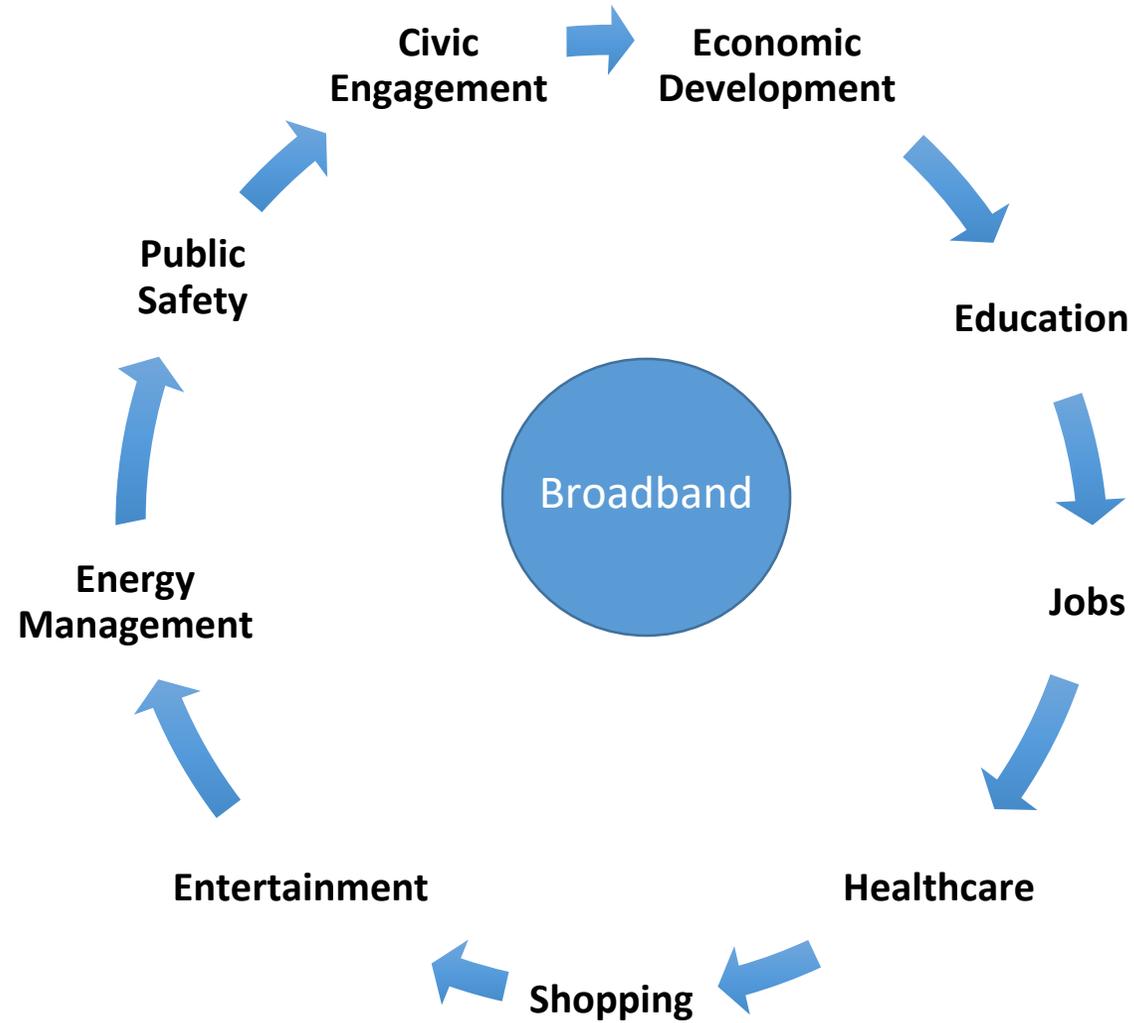
- Community Demographic Profile
- Current Reported Coverage
- Broadband Demand
- Local Assets
- Review of local policies & fees
- Broadband Needs
- Next Steps

Before We Begin

Broadband...

- boosts personal productivity
- facilitates more flexible work arrangements – Telework, Telecommute
- enables a home-based business as a replacement, or compliment, to a primary job
- assists people in becoming more informed
- provides education, social, and cultural opportunities
- can increase household income by \$1,850 (some say more!) per year
- reemployment approximately 25% faster than traditional searches
- higher employment rates in rural counties
- improves access to healthcare
- advance solutions that help manage chronic diseases, like diabetes and obesity
- connecting health and broadband sectors is a path to a more connected, healthier community
- can increase home value.
- can help grow population by attracting or retain millennials.

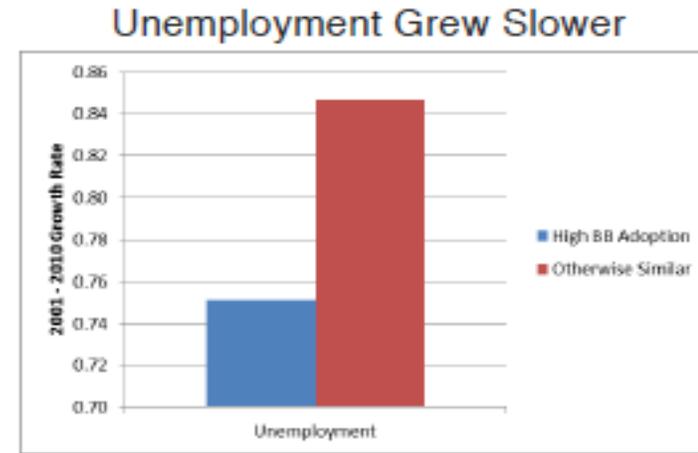
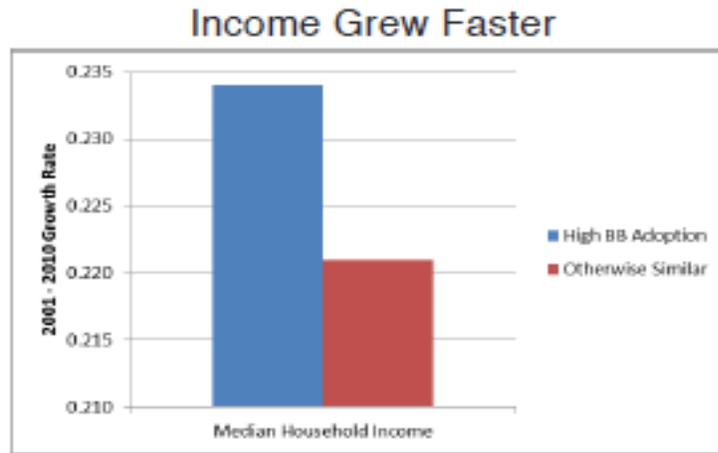
Why Does Broadband Matter?



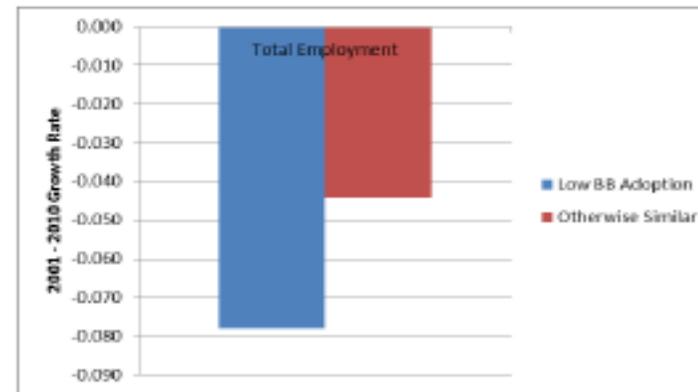
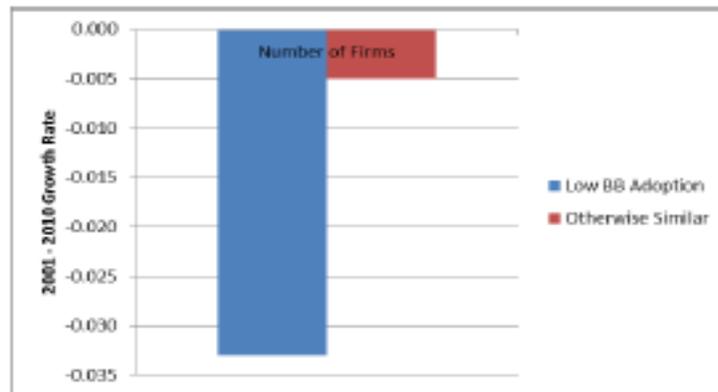
Why Does Broadband Adoption Matter?

In rural counties, between 2001 and 2010...

Where broadband adoption was high, (60%+)...



Where broadband adoption was low, (<40%)...



Lost More Businesses

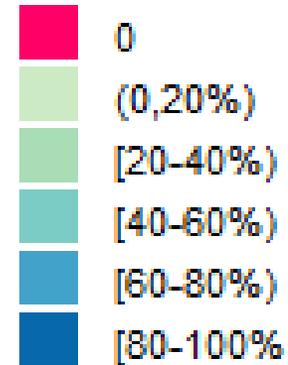
Lost More Jobs

Whitacre, Gallardo, and Stover. 2014a.
Telecommunications Policy

Mathews County Adoption Rate



Adoption 10↓/1↑



By Census Tract

Internet Adoption: ~40-60%

*Adoption rate is the number of residential fixed connections to the Internet per 1000 households. Sources differ on this metric, some say as much as 80%, others as low as 20-40%. Given the DSL coverage, estimated 60% to be safe.

Source: <https://www.fcc.gov/reports-research/maps/connect2health/data.html>

Take away: Data from the Purdue Center for Regional Development suggests that “if a rural area has widely available and adopted broadband, it can start to successfully attract or retain millennials.”

Take away: Mathews County health indicators exceed national estimates. Connecting healthcare and broadband sectors and increasing broadband adoption rates is a path to a more connected, healthier community.

The Economics of Broadband

Provider Perspective

$$[Revenues > (CapEx + OpEx)] = Sustainability$$

It doesn't matter if it is the private or public sector building and/or deploying services, the math has to work; revenue has to offset – be greater than - capital and operating expenses in order to sustain the network and create profit for upgrades, maintenance etc.

The Economics of Broadband

Locality Perspective

Localities can improve the investment opportunity for broadband expansion by helping to balance the sustainability equation. Recall:

$$[Revenues > (CapEx + OpEx)] = Sustainability$$

Increase Revenues ↑	LOWER COSTS ↓
Adoption and Demand	Local Assets/Infrastructure
Population Density	Policies & Fees
Community Anchor Institutions*	Partner for Funding Opportunities

*Revenues from a few of the biggest customers in a community (anchors/carrots) can make or break a business plan.

The Economics of Broadband

Local Perspective

According to a study by [Ohio State University Swank Program](#), “Estimates of the average annual benefits received by US broadband subscribers range from \$1,500 (Greenstein and McDevitt, 2012) to \$2,200 (Nevo et al., 2016) per household.

Using the mean from the Swank study; \$1,850, and broadband defined as: **minimum speeds of 25 Mbps download/3 Mbps upload** we can *estimate* economic benefits and losses expected from broadband availability in Mathews County:

477 Estimate of County Households without BB (connections < 25/3) = 543

477 Estimate of County Households with broadband (25/3 and above) = 5126

Potential annual economic benefits (or losses) according to the Swank Study could range from:

- Without Broadband $543 \times \$1,850 = \mathbf{\$1,015,650}$ **economic loss** - due to not having broadband connected homes.
- With Broadband : $5126 \times \$1,850 = \mathbf{\$9,483,100}$ **economic gain** – due to a broadband connected homes.
- The economic gain if all households in Mathews County had broadband service: $5736 \times \$1,850 = \mathbf{\$10,611,600}$

[FTTH Council released a study](#) showing access to ***fiber-delivered*** Internet boosts home values by up to 3.1 percent.

Median occupied household value (census 2017) for Mathews County Virginia: $\$227,200$ * .031 = **$\$7,043$ increase of home value.**

Community Profile

Sources: <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2017/>

<https://www.fcc.gov.edgekey.net/health/maps>

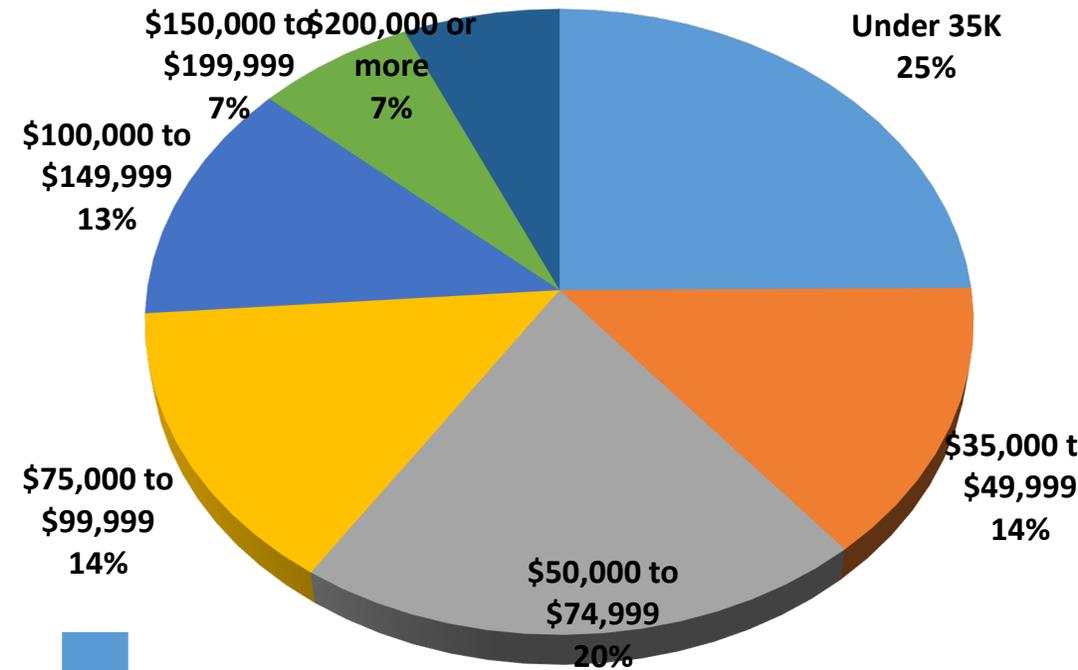
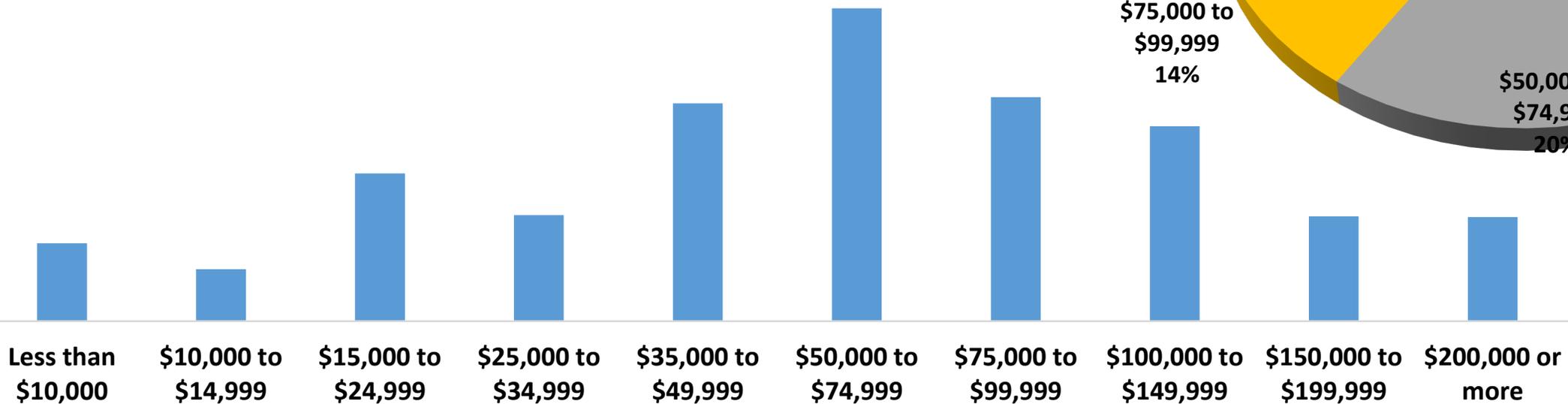
<https://www.census.gov>

Broadband Perspective

Mathews County Household Income

Total Households: 5,736
 Median Household Income: \$63,622

Mathews County Household Income

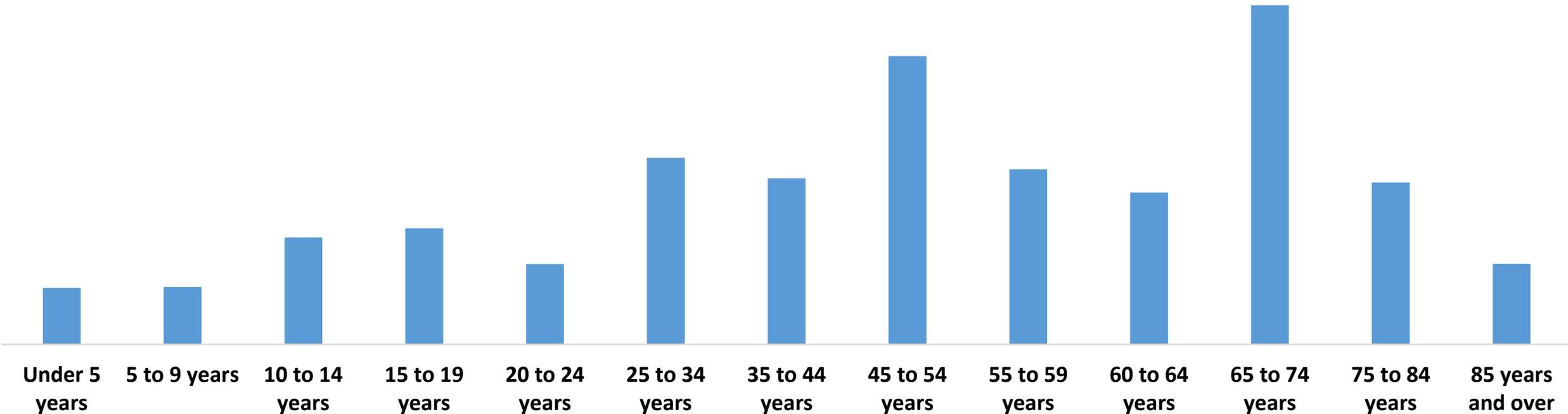


Take away: Adoption issue - 25% of households (< \$35K) may be slow to adopt new services or have affordability challenges.

Mathews County Age and Population

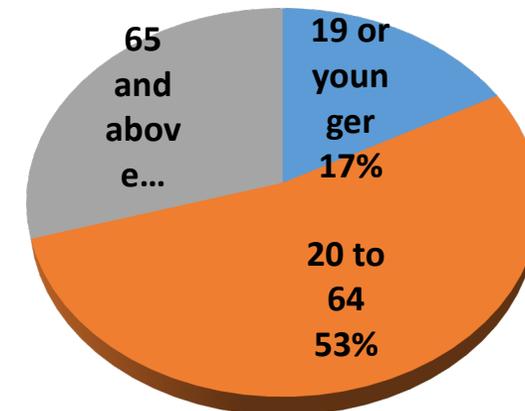
Total Population: 8,830

Median Age: 52.6

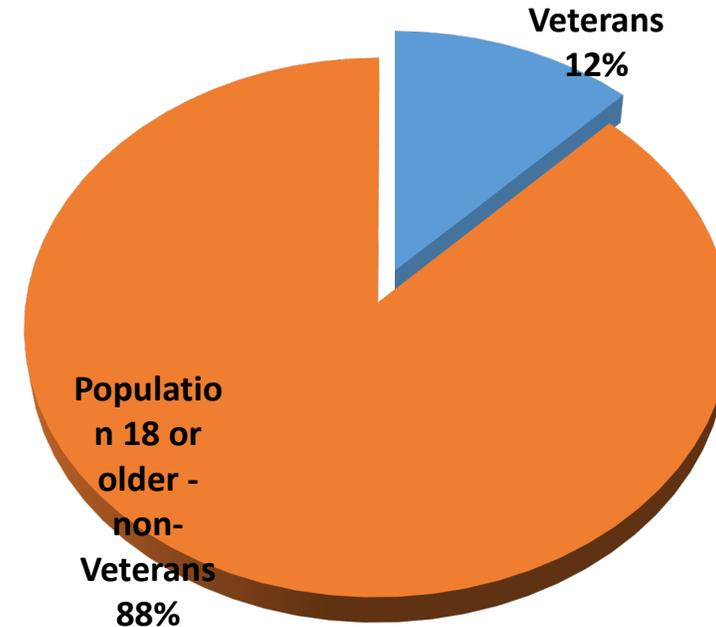
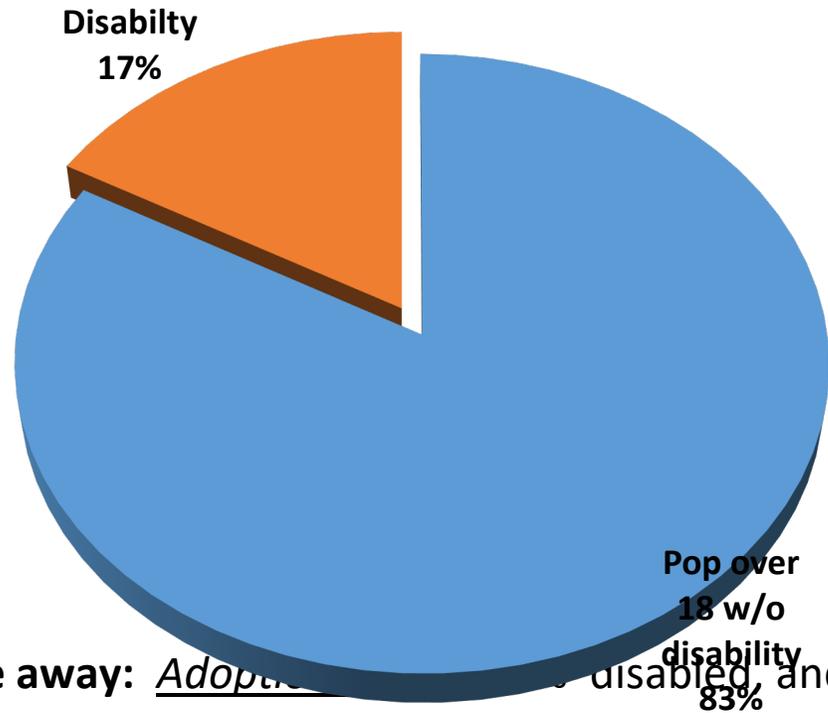


Take away:

- Adoption Issue - 30% may be slow to adopt.
- Majority of population – 53% - considered technology adopters.
- Largest population group; 65-74 (1,522)



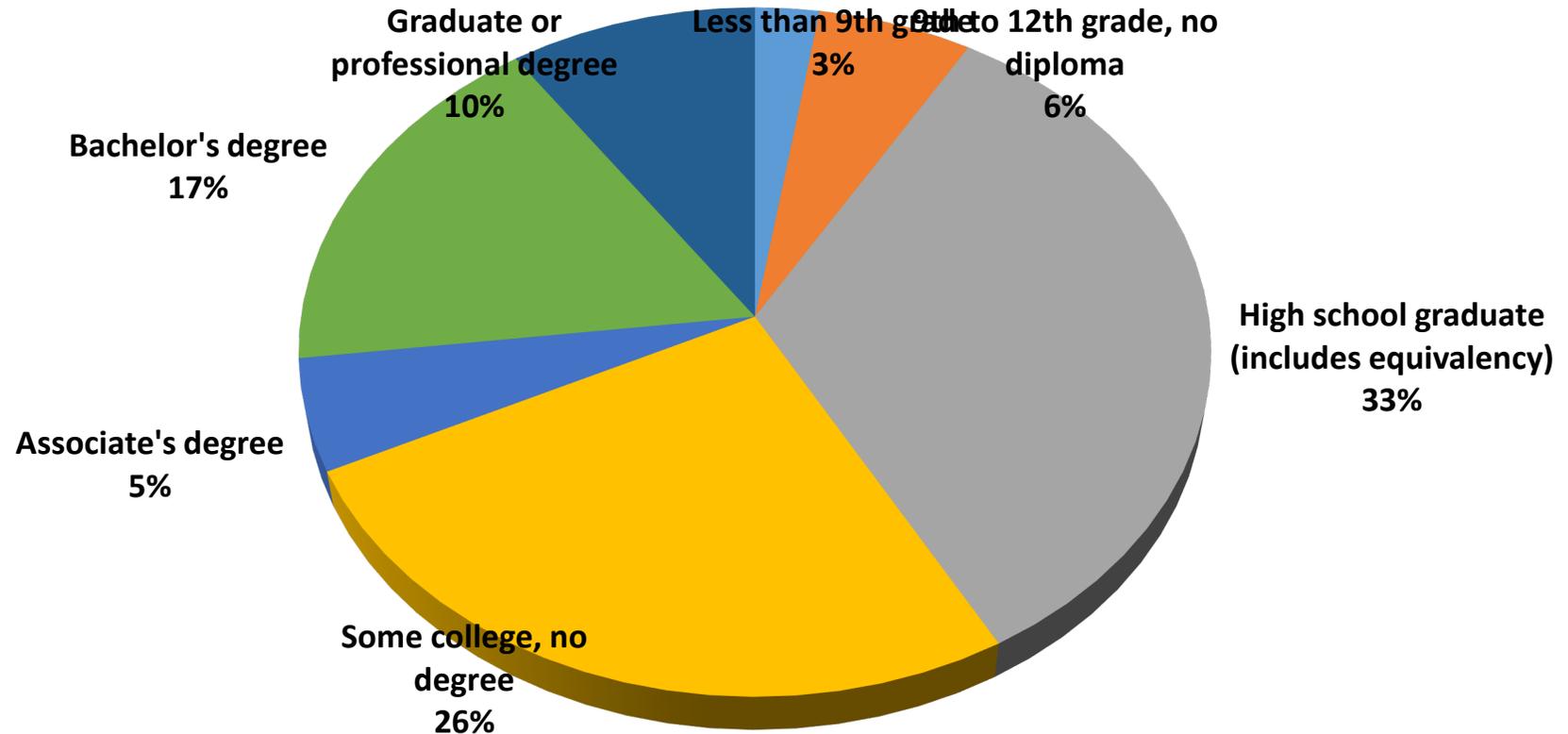
Mathews County Populations with Special Broadband Needs



Take away: Adoption of disabled, and 12% veterans, may be slow to adopt or need special equipment.

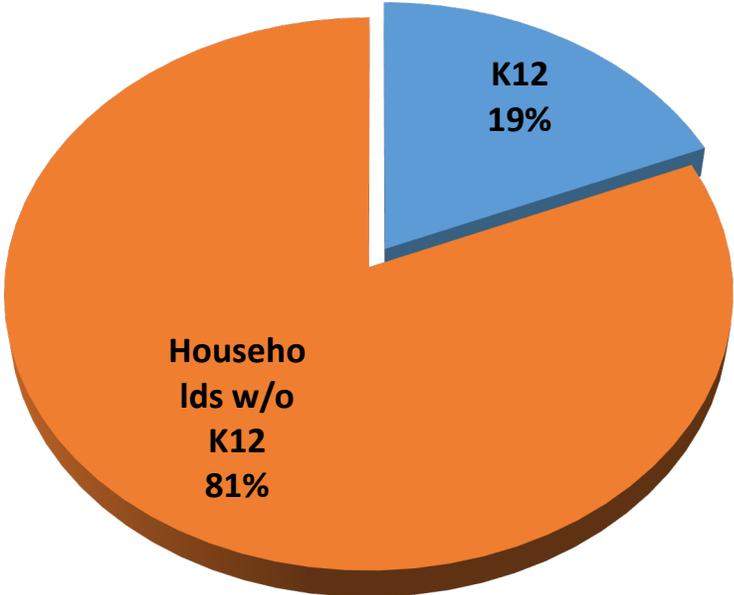
Veterans living in rural areas are among the largest population of Americans who struggle to receive accessible and affordable healthcare. While broadband-enabled telehealth services and applications can improve veterans' access to health care, lack of connectivity is a significant barrier to telehealth adoption.

Mathews County Educational Attainment



Take away: Adoption Issue - 9% of the population may be slow to adopt and/or less likely to subscribe to new services.

Mathews County Households with K-12 Children

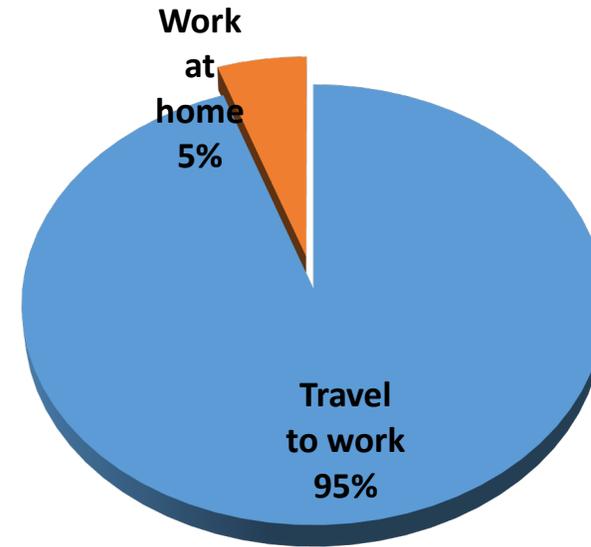


Take Away: According to Census, 19% of households need broadband at home to support K-12 education.

Mathews County Residents Working from Home

Take away: According to Census, 5% of Mathews County's workforce works from home, 95% commute in some way.

~65.8% commute outside the county for work.

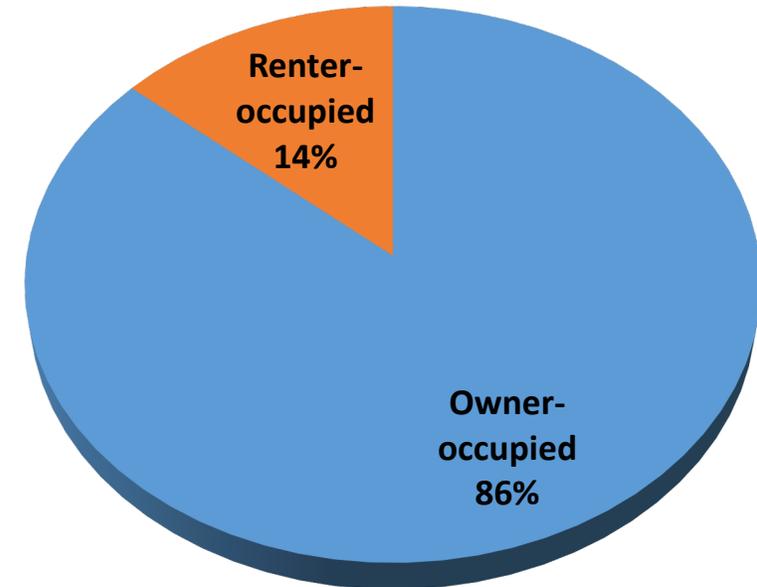
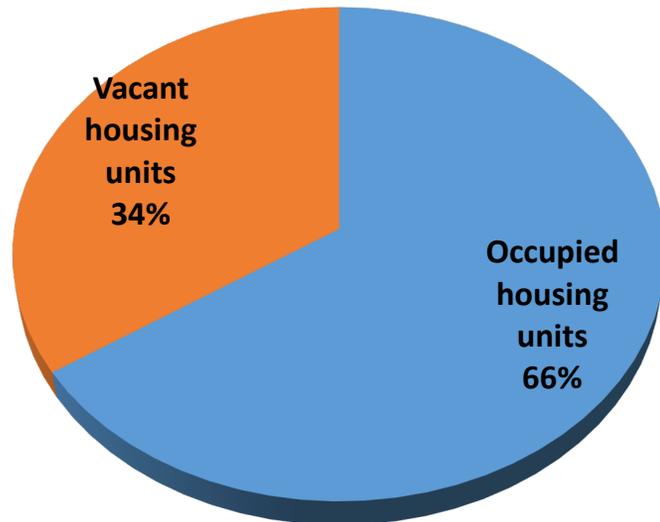


Revenue and economic development opportunities are lost to neighboring localities when working outside county of residence.

Working from home keeps dollars circulating in the local economy.

Mathews County Housing

Total Housing Units: 5,736
Occupied Household: 3,766

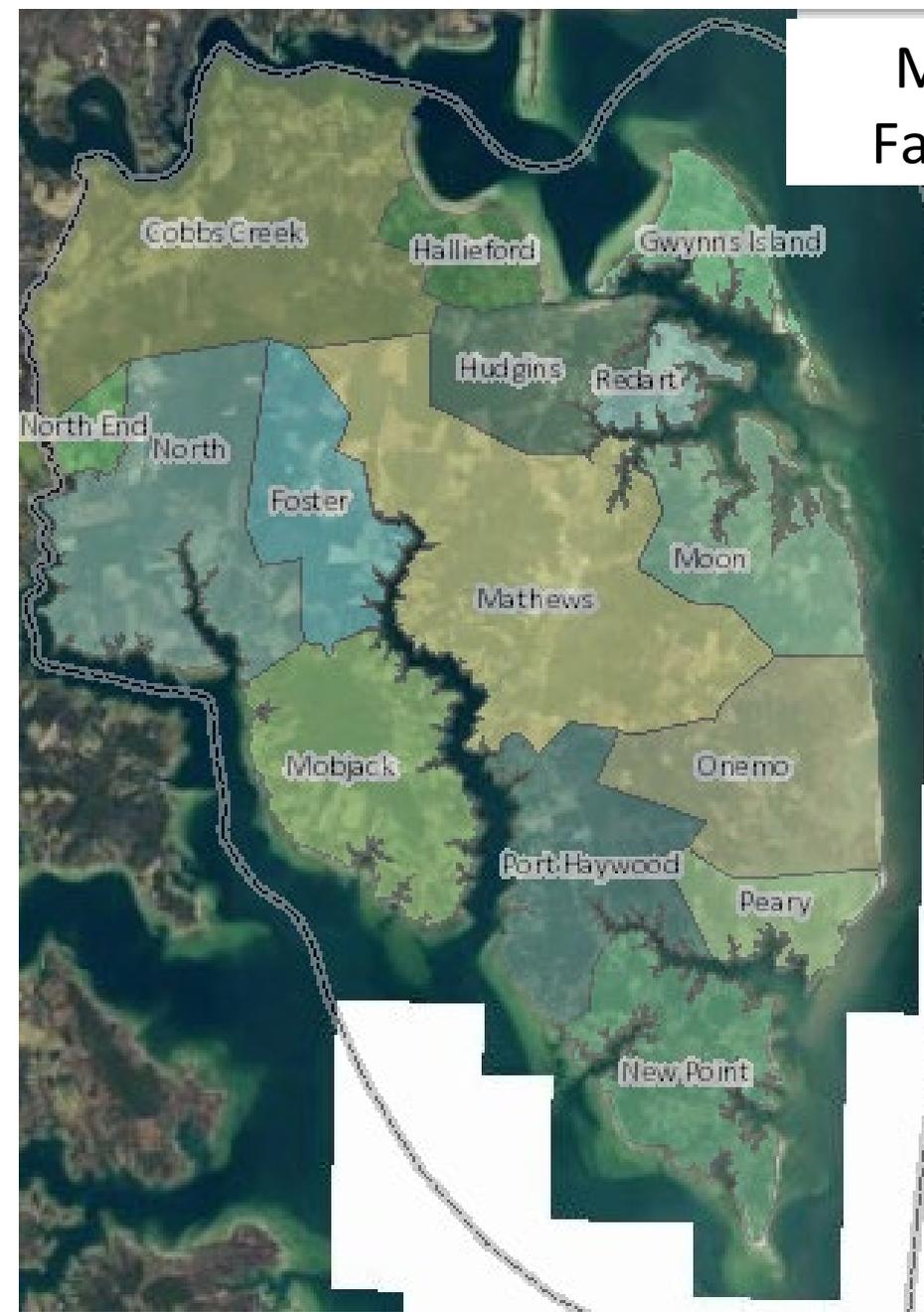


Take away: 34% of housing units are vacant or represent seasonal/weekend homes.

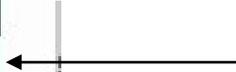
*a vacant unit may be one which is entirely occupied by persons who have a usual residence elsewhere.

Source: <https://www.census.gov/housing/hvs/definitions.pdf>

Mathews County Families in Poverty



Mathews County Communities



Reported Current Coverage

FCC 477 Provider Reported Data – June 2018

Seriously

Important note about FCC reported coverage

All facilities-based broadband providers* **are required** to file data with the FCC twice a year (Form 477) on where they offer Internet access service at speeds exceeding 200 kbps in at least one direction.

Fixed providers file lists of census blocks in which they **can or do offer service** to at least one location, ...

Mobile providers file maps of their coverage areas for each broadband technology (e.g., EV-DO, HSPA, LTE).

Block-Level Deployment and Competition

A provider that reports deployment of a particular technology and bandwidth in a particular census block may not necessarily offer that particular service everywhere in the census block.

Accordingly, a list of providers deployed in a census block does not necessarily reflect the number of choices available to any particular household or business location in that block, and the number of such providers in the census block does not purport to measure competition.

Source: Source: <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>

***A Facilities-based Broadband Provider** is an entity that provides broadband services over facilities it owns, provisions and/or equips.

Take away – FCC coverage maps are overstated !

Mathews County

Providers reporting to FCC

DBA Name	Technology Code	Technology Name	Consumer Only?	Business Only?	Maximum Consumer Download	Maximum Consumer Upload	Maximum Business Download	Maximum Business Upload
Acquisitions Cogeco Cable Holdings II Inc.	42	Cable	Yes	No	200	15	0	0
Acquisitions Cogeco Cable Holdings II Inc.	50	Fiber	No	Yes	0	0	1,000	1,000
Cox Communications, Inc.	42	Cable	No	Yes	0	0	300	30
Gamewood, Inc.	70	Fixed Wireless	Yes	No	6	6	0	0
Verizon Communications Inc.	10	DSL	Yes	No	15	1	0	0

Take away: Cox and Gamewood are erroneous 477 filings.

COUNTY NAME	BROADBAND AVAILABILITY PER FCC	Microsoft BROADBAND USAGE
Mathews County	93.3%	19.4%

The FCC reports that broadband is available to 93 percent of Mathews County residents.

Microsoft's data for Mathews County indicates that those that connect to the internet at 25 Mbps is probably closer to 19 percent.

<https://news.microsoft.com/rural-broadband/>

Counties with the largest gap between FCC broadband availability and broadband usage from Microsoft data

Virginia

FCC Broadband availability

Broadband usage

The FCC reports that broadband is available to ~93 percent of Mathews County residents.

Microsoft's data for Mathews County indicates that those that connect to the internet at 25 Mbps is probably closer to 19 percent.

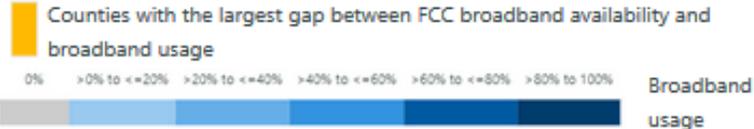
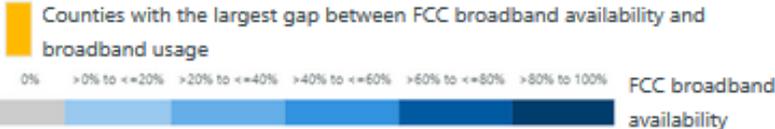
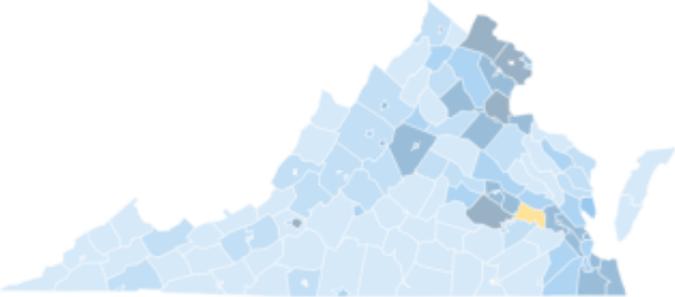
Mathews County

93.3%



Mathews County

19.4%



Data sources: FCC 2018 Broadband Report based on Form 477 data from December 2016 and Microsoft data from September 2018
Form 477 sample data format: 0000000000000000, DBAName, 0, 0, 0, 0, 0, 0

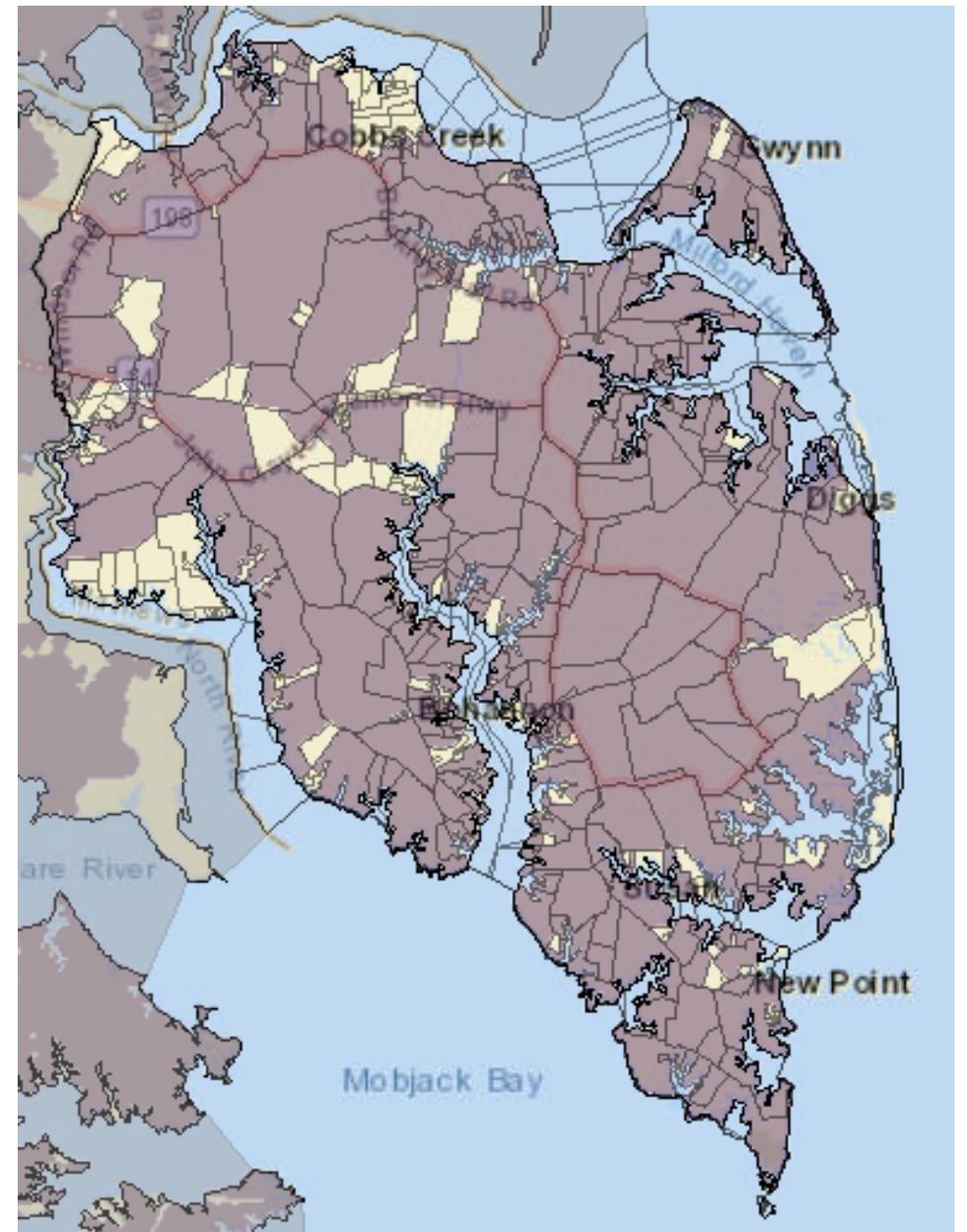
Source: <https://news.microsoft.com/rural-broadband/>

Mathews County

Cable and Fiber (delivered services) Coverage

Atlantic Broadband

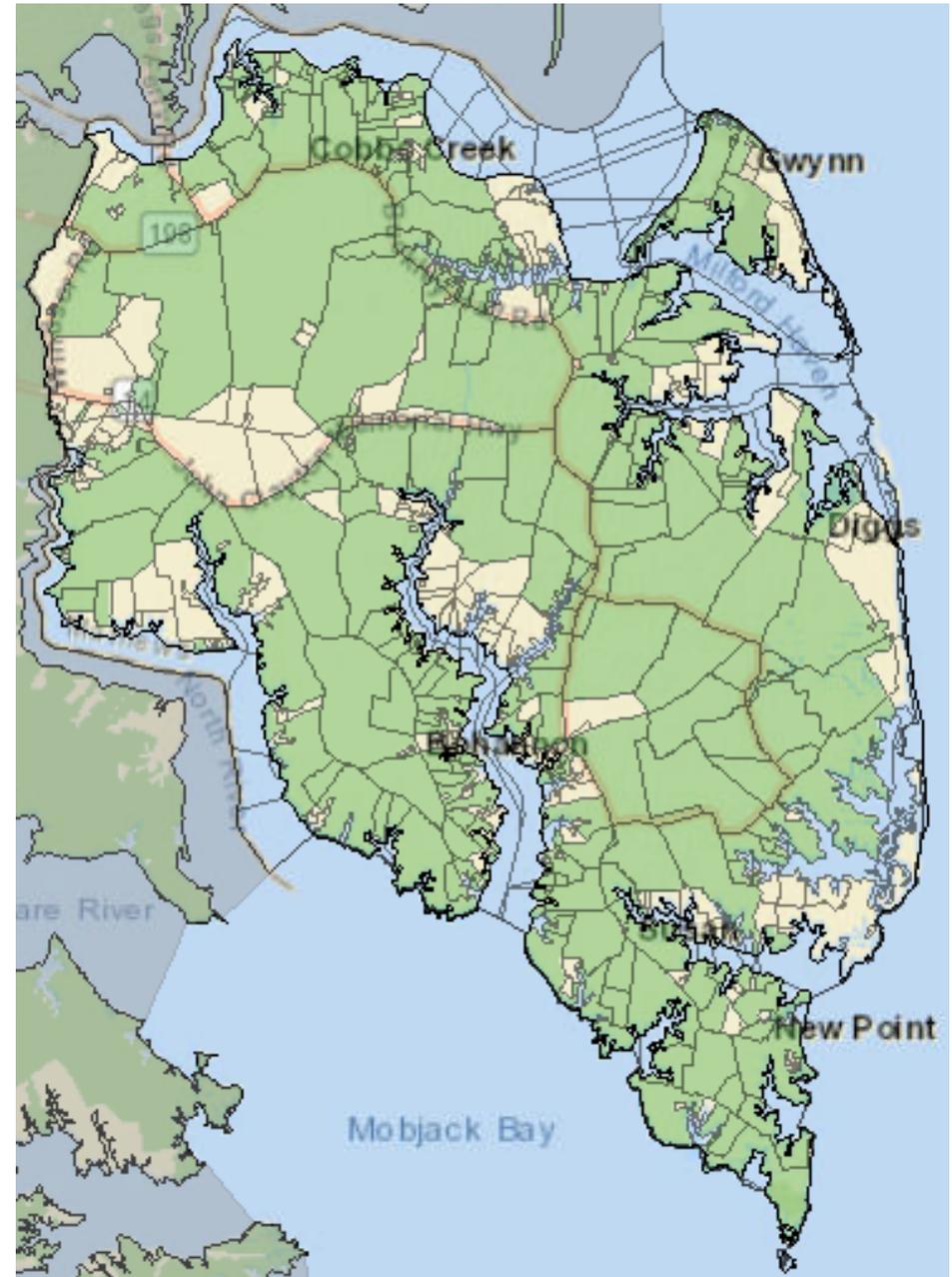
NOTE: No commercial fiber routes reported in Mathews County.



Mathews County

DSL Coverage

Verizon



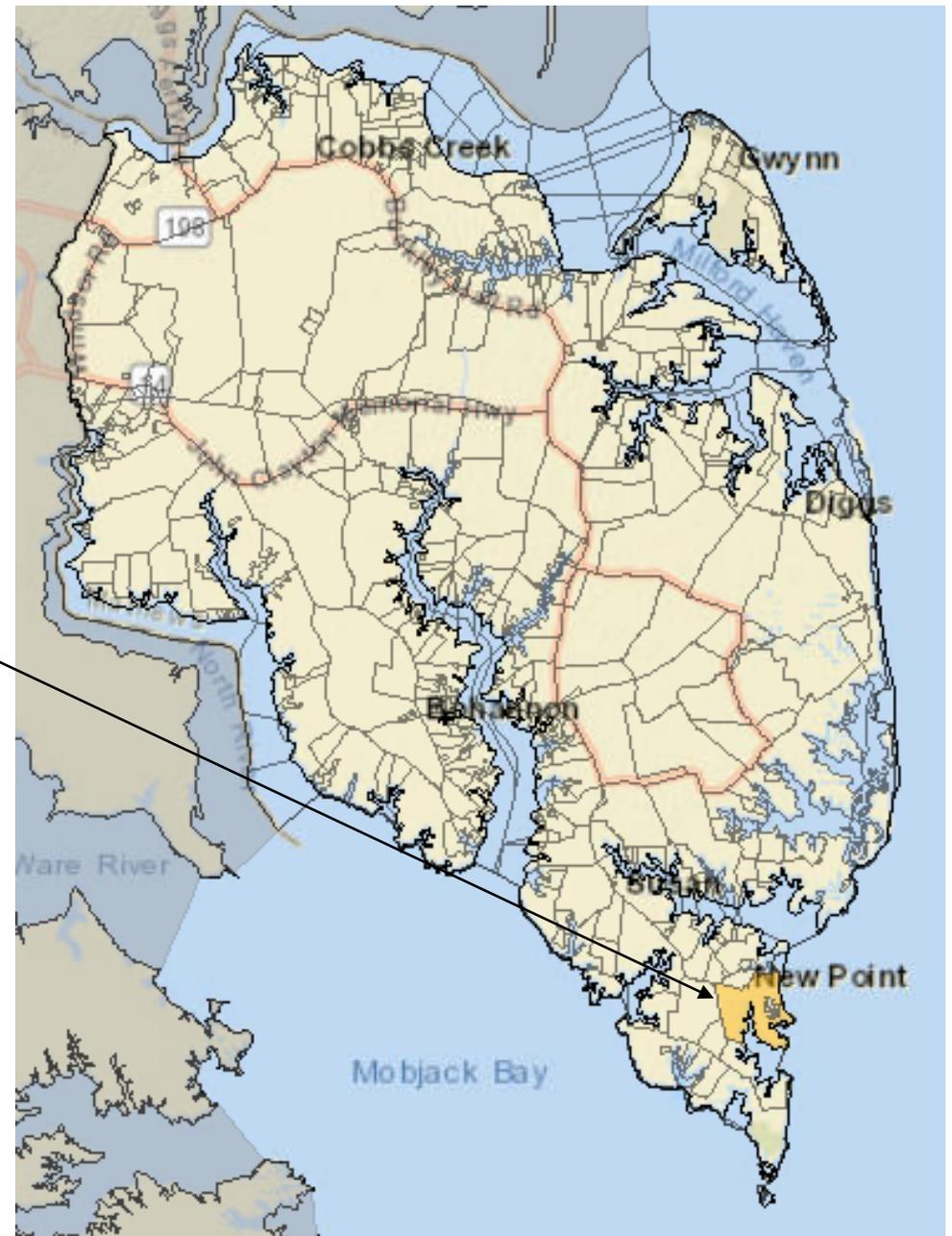
Mathews County

Fixed Wireless Coverage

No fixed wireless service reported in Mathews County.

Gamewood's 477 coverage in Mathews is an error.

Keith Morgan of Middle Peninsula Gateway Communications says his company does provide fixed wireless services in Mathews County. He claims he has submitted 477 data, however there no FCC 477 data in the June 2018 filing for Middle Peninsula Communications.



Mathews County

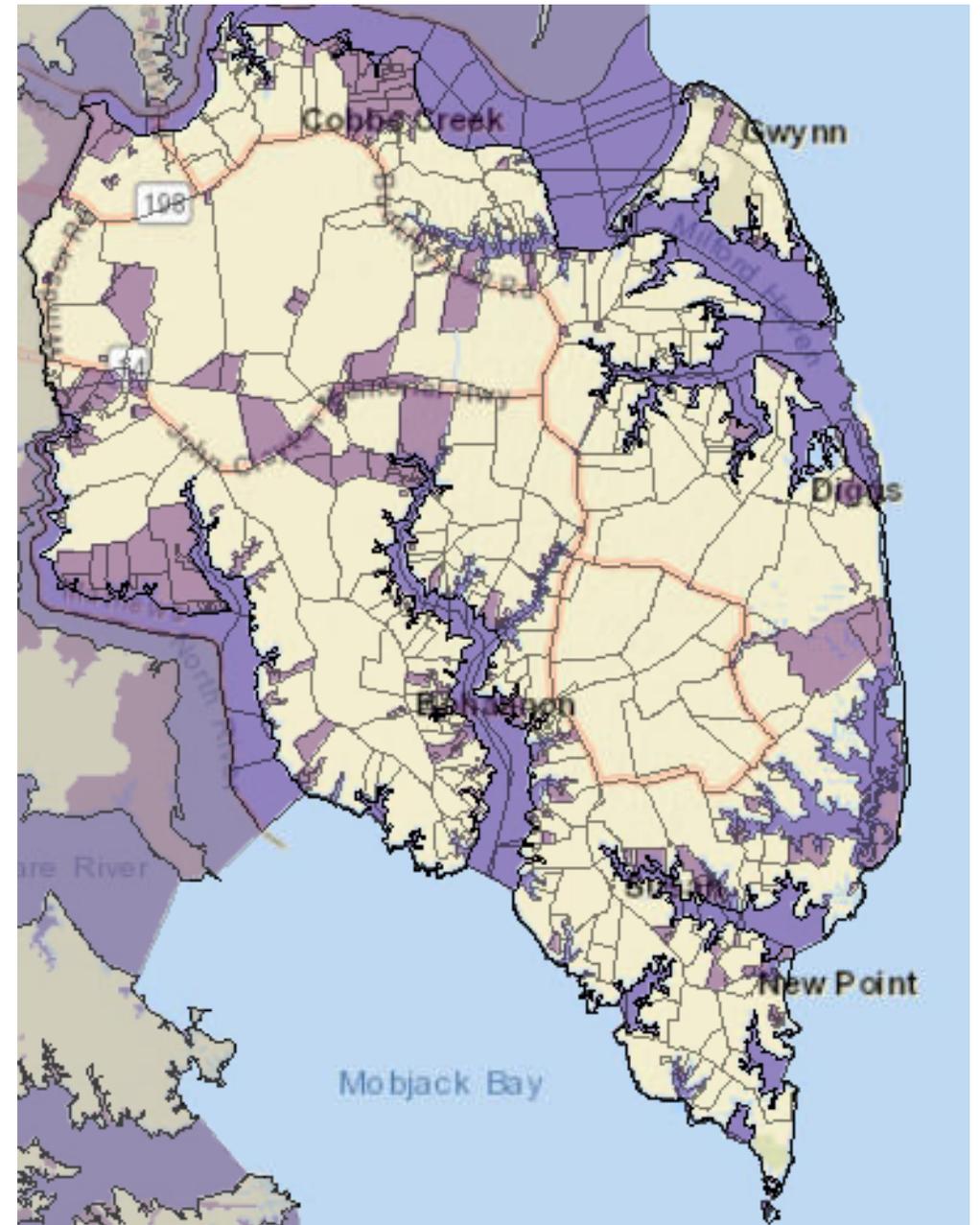
Areas unserved according to FCC 477 June 2018 data

■ Areas of coverage reported at less than 25 Mbps download and 3 Mbps upload or less.

These areas may be eligible for funding under the Virginia Telecommunication Initiative (VATI).

VATI defines unserved areas as having broadband speeds of less than or equal to 25 Mbps download and 3 Mbps upload.

Take away: There are approximately 612 address points within the unserved areas



Mathews County Public Safety and Vertical Assets

FirstNet 1x1 mile grids.

Proposed terrestrial coverage



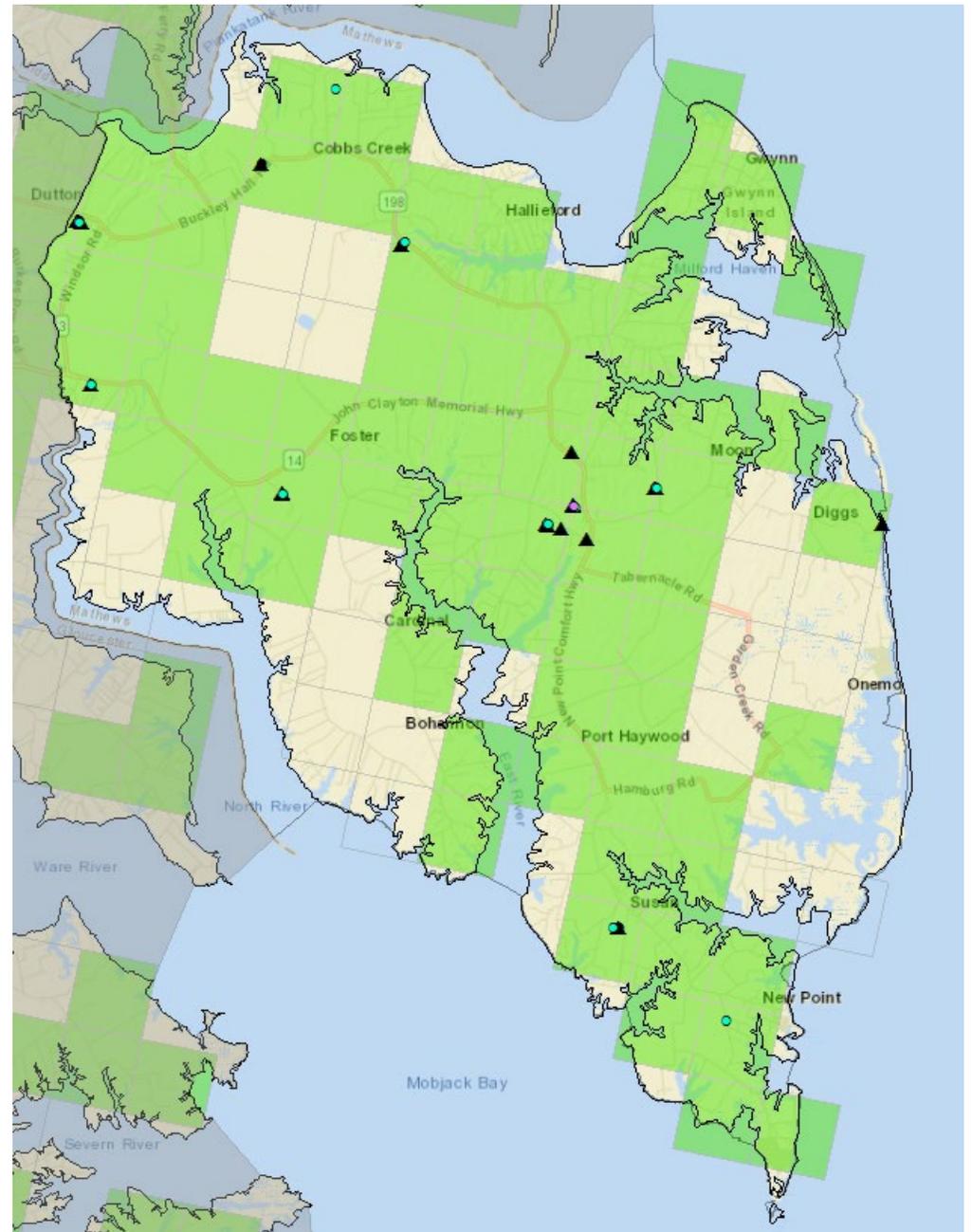
Proposed non-terrestrial coverage



***VDEM coordinating FirstNet activities**

Vertical Assets Data Source

- FCC: ASR
- Mathews County
- Commonwealth of Va.
- ▲ Other



Broadband Demand

Now and Into the Future

Mathews County Survey Results

Mathews County Survey Summary

1220 Total Survey Respondents

- 1056 Residential,
 - 109 Home-based businesses,
 - 11 Farms,
 - 21 Commercial businesses,
 - 17 Other responses
-
- **~31 % of occupied households responded.**

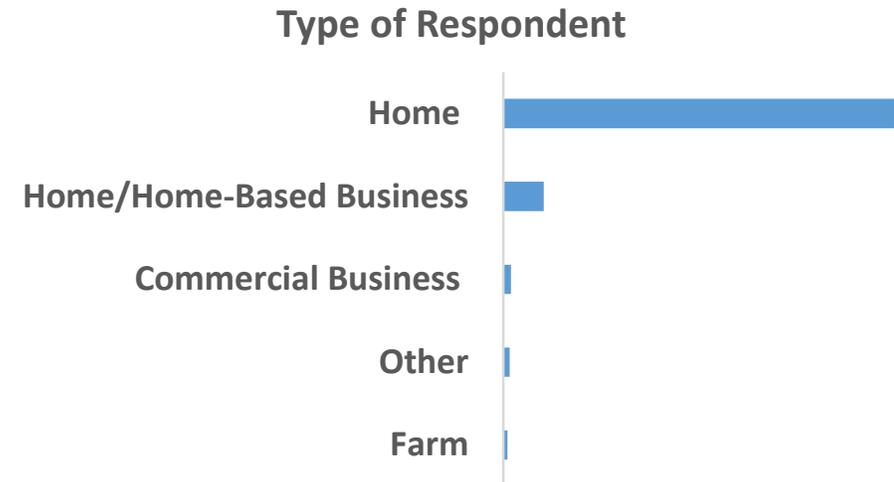
3766 Occupied housing units (2017 Census)

Based on 3766 occupied housing units, these 1176 residential responses represents Mathews County households with: **99 % (+/- 3%) accuracy**

Mathews County Survey Responses

Check all that Apply

Type of Responses	# of responses	Percent of 1214
Home	1056	86.99
Home/Home-Based Business	109	8.98
Commercial Business	21	1.73
Other	17	1.40
Farm	11	0.91

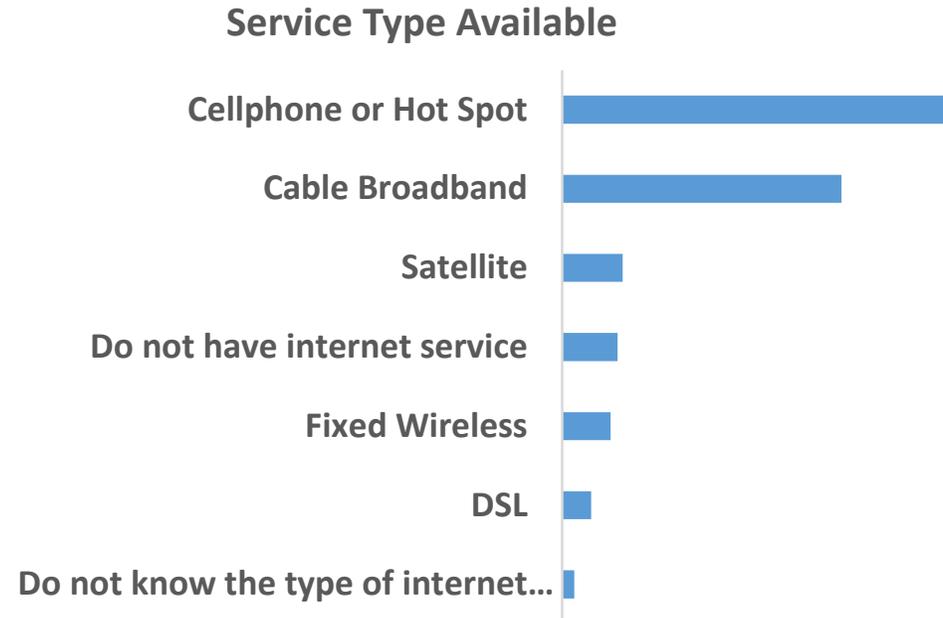


Take away: Most responses from residents. Other responses include: Rental property, vacation home, 2nd home, Gwynn's Island PO, Museum;

Mathews County Survey Responses

Check all that Apply

Service Type Available	# of Responses	% of 1219
Cellphone or Hot Spot	880	72.19
Fixed Wireless	107	8.78
Cable Broadband	619	50.78
DSL	64	5.25
Satellite	134	10.99
Do not have internet service	123	10.09
Do not know the type of internet service	27	2.21

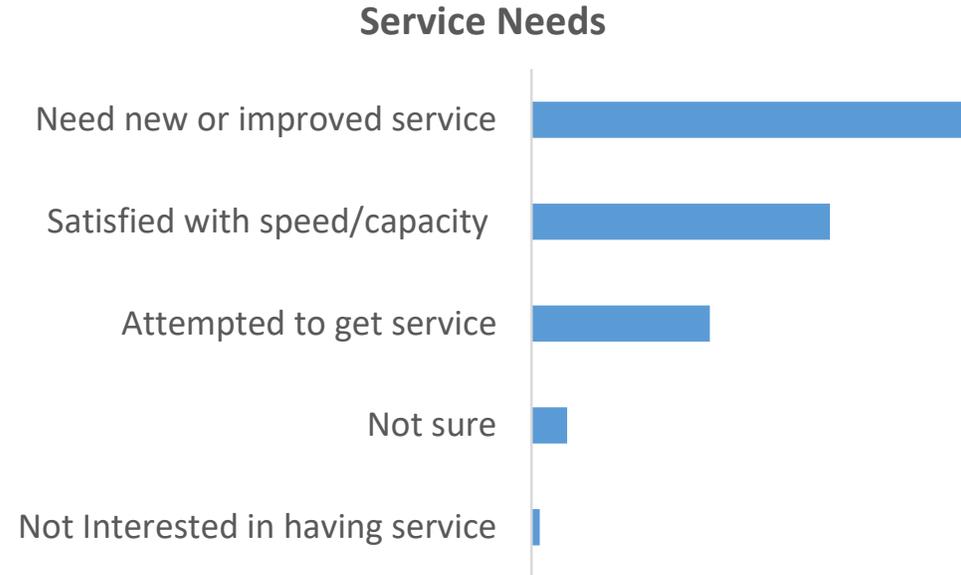


Take away: Most respondents have access to cellular or cable services. 10% say they do not have Internet access.

Mathews County Survey Responses

Check all that Apply

Service Needs	# of Responses	% of 1219
Satisfied with speed/capacity	433	35.52
Need new or improved service	628	51.52
Attempted to get service	259	21.25
Not Interested in having service	12	0.98
Not sure	52	4.27



Take away: 35% of respondents say they are satisfied with their current Internet service. ~50% need new or improved Internet service. ~21% of respondents say they've attempted to get Internet service but the costs were too high.

Mathews County Survey Responses - Check all that Apply

What would you like to be able to do online	# of responses	% of 807
Work from home	355	43.99
Operate a home-based business	177	21.93
Establish an online business	112	13.88
Transmit large data files	329	40.77
Online education and training	365	45.23
Smart home devices	391	48.45
Video phone calls via internet	343	42.50
Healthcare communication/monitoring	250	30.98
Email	387	47.96
Online shopping	367	45.48
Financial/banking transactions	330	40.89
Search for work/a job	122	15.12
News	319	39.53
Browsing	387	47.96
Streaming media	491	60.84
Social Media	298	36.93
Video games	179	22.18

What would you like to be able to do online?

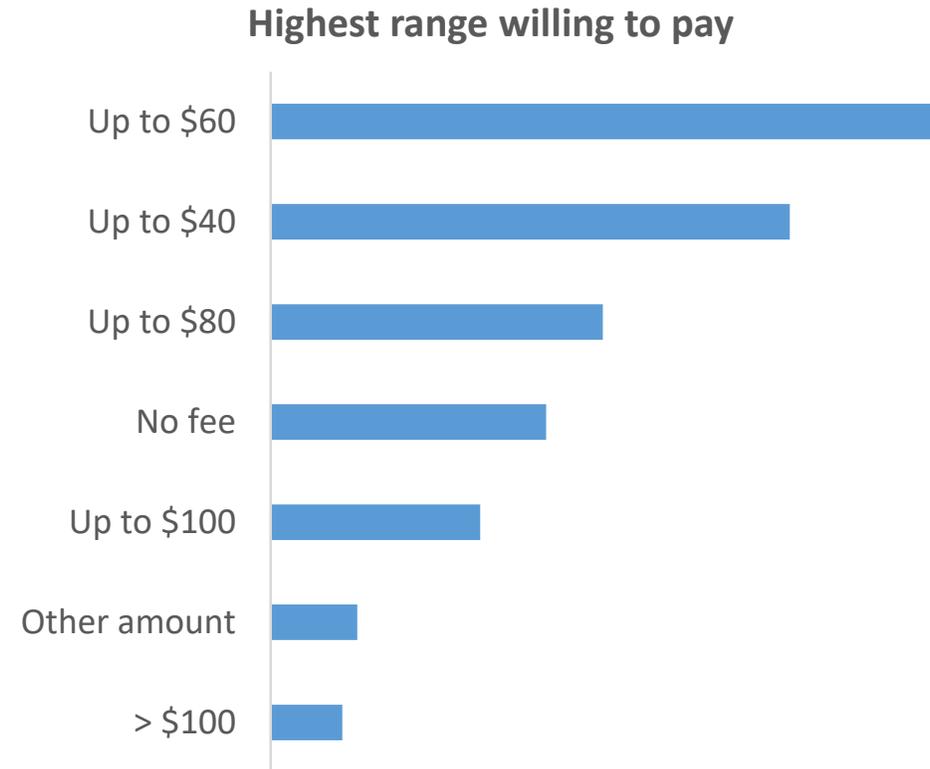


Take away: Most respondents want to use higher bandwidth applications, such as; Streaming media, education and training. ~44% of respondents would like to be able to work from home. ~66% of workforce commutes outside of Mathews for work. **Revenue and economic development opportunities lost to neighboring localities when working outside county of residence.**

Mathews County Survey Responses

Check all that Apply

Highest range willing to pay	# of responses	% of 1219
No fee	146	11.98
Up to \$40	275	22.56
Up to \$60	353	28.96
Up to \$80	176	14.44
Up to \$100	111	9.11
> \$100	38	3.12
Other amount	46	3.77



Take away: Most (29%) of respondents are willing to pay up to \$60. per month for broadband services. More than 10% do not want to pay for services, this is an adoption and usage issue. ~22% can pay up to \$40 per month for broadband, is may be an affordability issue.

Local Assets

Vertical Assets, Fiber, Conduit and Community Anchors

Mathews County

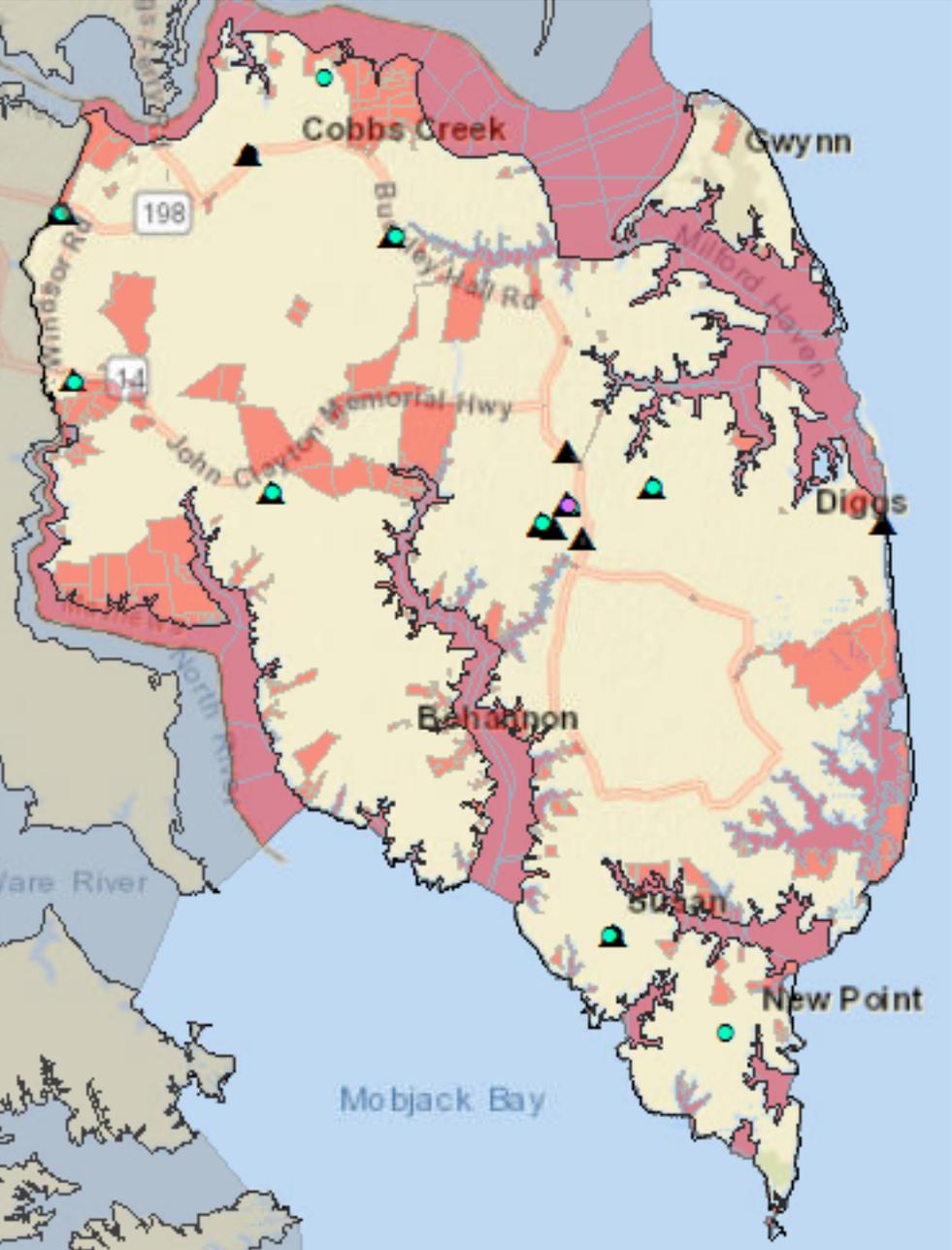
Vertical Assets and Unserved Areas

● Unserved (below 25/3) according to FCC 477 Dec 2017v2

Take away: Many vertical assets in close proximity to unserved areas.

Vertical Assets Data Source

- FCC: ASR
- Mathews County
- Commonwealth of Va.
- ▲ Other



Mathews County

Approximately 612 address points in unserved areas

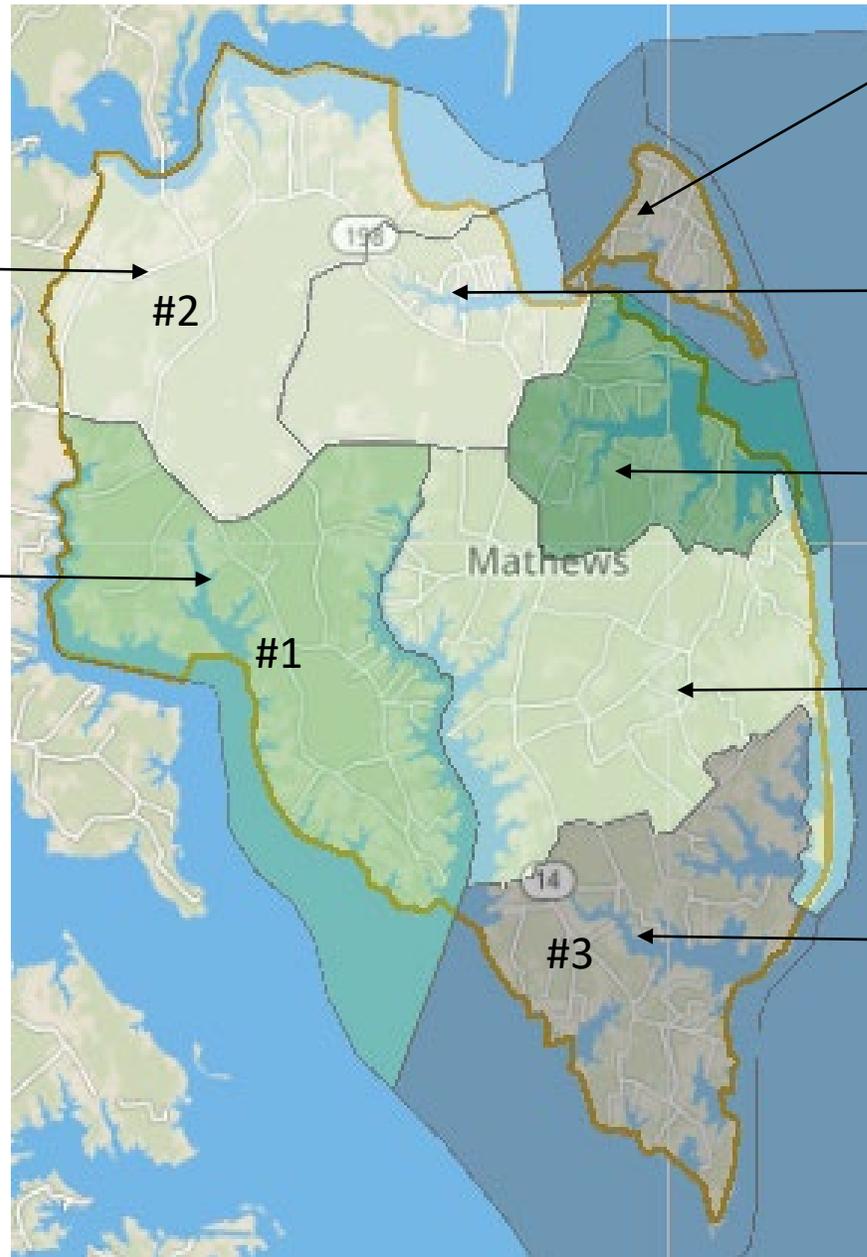
Median Income: \$52,207 ± \$14,610
 Household Density: 671 ± 157 households
 39 households/sqmi
 124 adrs in unserved areas

Median Income: \$69,942 ± \$12,595
 Household Density: 559 ± 161 households
 32 households/sqmi
 214 adrs in unserved areas

Median Income



Source: ACS, Data by Census Block Groups



No data available
 65 adrs in unserved areas

Median Income: \$53,079 ± \$19,785
 Household Density: 391 ± 155 households
 44 households/sqmi
 46 adrs in unserved areas

Median Income: \$86,576 ± \$22,850
 Household Density: 638 ± 158 households
 92 households/sqmi
 20 adrs in unserved areas

Median Income: \$62,574 ± \$15,530
 Household Density: 894 ± 216 households
 44 households/sqmi
 62 adrs in unserved areas

No data available
 81 adrs in unserved areas

Mathews County School District

✔ [Above 100 kbps min.](#)

✔ [Meeting 100% fiber goal](#)

[Internet Access Affordability](#)



917 kbps
PER STUDENT



ALL SCHOOLS
SCALABLE



\$3.15/Mbps
MONTHLY IA COST

 1091 Students  [3 Schools](#)  [2 Campuses](#)  Rural Locale

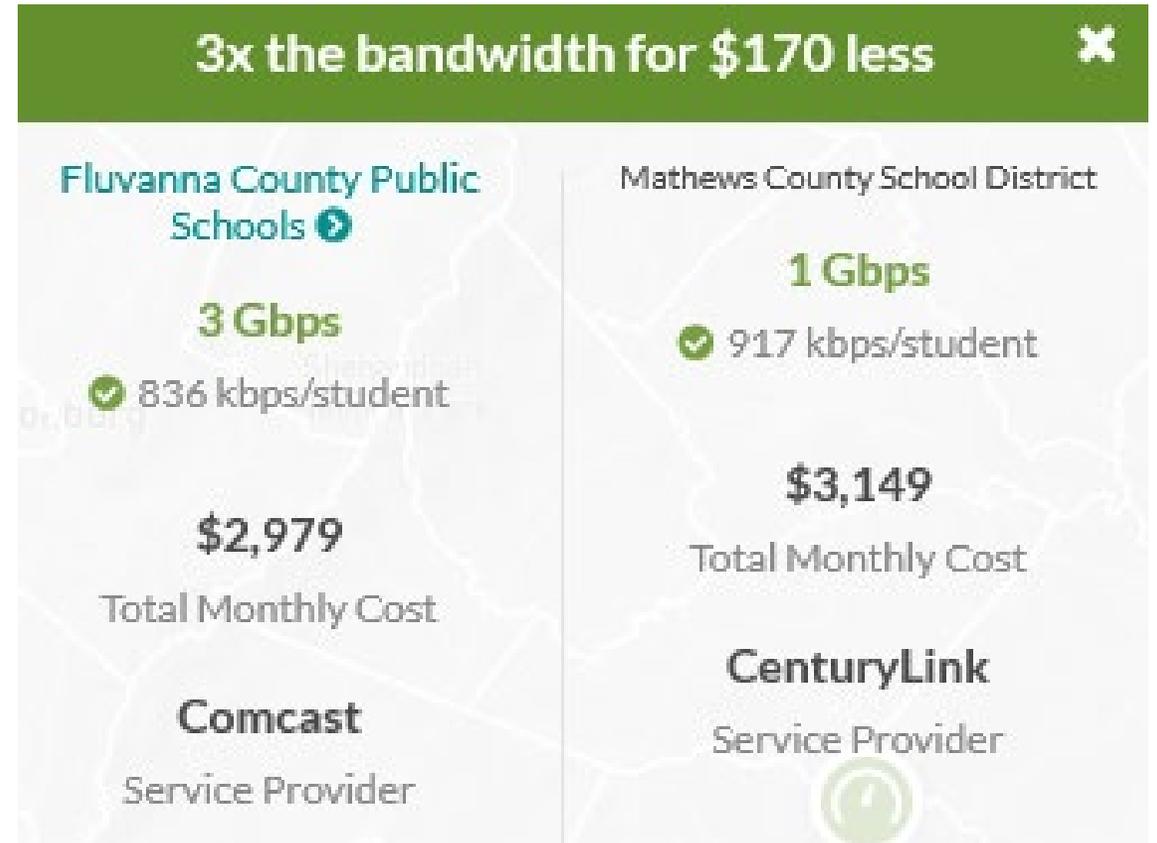
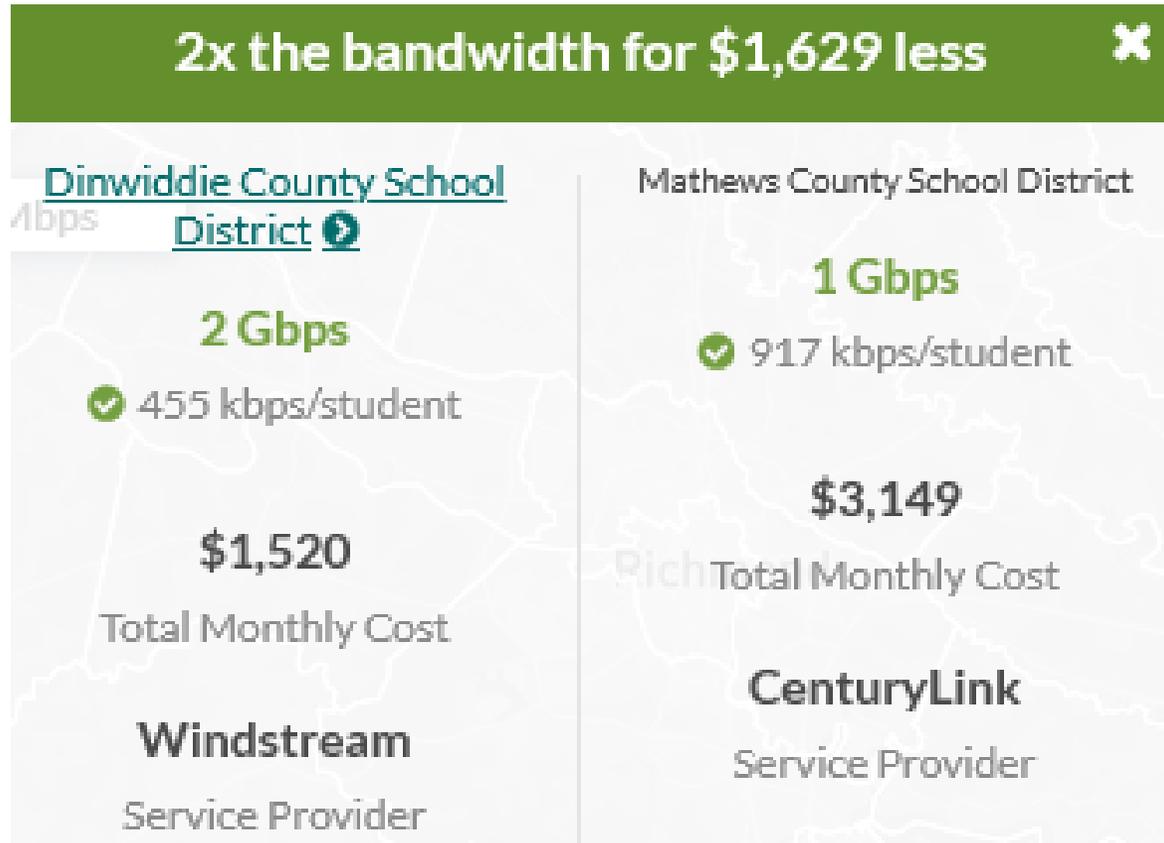
NCES ID: [5102430](#) | BEN ID: 126499

FY2020 E-rate form 470s: None Filed

Services Received in 2019

Purpose	Bandwidth	Connection Type	Connections	Monthly Recurring Cost/Connection	Non-Recurring Cost	Service Provider	Contract End Date
Transport (WAN)	10 Gbps	Lit Fiber	1	\$970	\$0	Conterra Broadband	01/01/2023
Internet	1 Gbps	Lit Fiber	1	\$3,149	\$0	CenturyLink	10/28/2020
Transport (WAN)	10 Gbps	Lit Fiber	1	\$970	\$0	Conterra Broadband	01/01/2023

Examples of better pricing for similar service



Review of Local Policies & Fees

Affect the Broadband Economics

Make sure your policies and procedures are “Broadband Friendly”

Review comprehensive plans, community zoning regulations and process, policies, fees, etc. must encourage and enable broadband investment.

Review local franchise agreements for **setback or long-drop** policy. Long-drop policy information should be proactively conveyed to all new homebuilders, and real estate developers.

Adopt Dig Once: Dig Once means less construction disruption, and lower costs for private providers—who may simply decide not to deploy in an area where the economics don’t work.

Google Fiber Checklist:

<https://fiber.storage.googleapis.com/legal/googlefibercitychecklist2-24-14.pdf>

Remember to make it “cheap, quick & easy”

County Local Policies

The following policies may not represent a comprehensive list of potential local Internet related policies. All local Internet related policies should be reviewed with potential partners and adjusted as necessary to explore incentives and identify barriers to broadband expansion

X County has / has not adopted the PPEA procurement process.

The primary reason for using PPEA procurement rather than a traditional RFP is that the bulk of any broadband project is going to be defined as “engineering” or “construction” under the Public Procurement Act. Engineering needs to be done by competitive negotiation; construction can only be procured by competitive sealed bidding. You can do a design/build contract, but that’s a pain as well and still leaves you with an operating phase that you don’t have covered. So you wind up doing at least two and probably three separate procurements and contracts: (1) RFP for engineering services to design; (2) IFB for construction services; (3) an RFP for operational services. As an administrative matter, a PPEA is usually faster, more flexible, and no more expensive; (4) the PPEA is the most provider friendly procurement type for responding to local broadband expansion requests.

NEXT STEPS

The Path Forward



Potential Funding

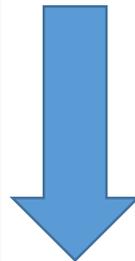


Go to <https://www.commonwealthconnect.virginia.gov/>

Click the Funding and Partnership Tab

Click the link below for a list of both state and federal broadband funding opportunities.

<https://www.commonwealthconnect.virginia.gov/sites/default/files/CIT%20Documents/Broadband%20Funding%20Opportunities%202019.pdf>



Prepared by CIT

Virginia Funding Opportunities			
Source	Opportunity	Eligible Applicant	Application Timeline
Department of Housing and Community Development (DHCD)	Community Development Block Grant Planning Grant http://www.dhcd.virginia.gov/index.php/community-partnerships-dhcd/79-community-development-block-grant-cdbg-planning-grant.html	Units of local government in non-entitlement localities.	January - September
	Virginia Telecommunication Initiative (VATI) http://www.dhcd.virginia.gov/index.php/business-va-assistance/telecommunications/254-virginia-telecommunication-planning-initiative-vatpi.html		
Department of Housing and Community Development (DHCD)	Virginia Telecommunication Initiative (VATI) http://www.dhcd.virginia.gov/index.php/business-va-assistance/telecommunications/254-virginia-telecommunication-planning-initiative-vatpi.html	A unit of government (Towns, Cities, Counties, EDA/IDA, Broadband/Wireless Authorities, Planning District Commissions, etc.) with a private sector provider(s) as a co-applicant.	Fall
Virginia Tobacco Indemnification and Community Revitalization Commission	TRRC Revolving Loan Fund https://www.revitalizeva.org/grant-loan-program/loan-programs/	Public or incorporated non-profit private organizations located in and/or providing economic revitalization programs, services, or facilities in the tobacco region.	Announced annually
	Economic Development Grant Program https://www.revitalizeva.org/grant-loan-program/grant-programs/southwest-and-southside-economic-development-grant-program/		
Virginia Resources Authority (VRA)	Virginia Pooled Financing Program http://www.virginiaresources.org/page/virginia-pooled-financing-program/	Local governments	Fall and Spring
Virginia Department of Agriculture and Consumer Services	Agriculture and Forestry Development Fund http://www.vdacs.virginia.gov/agriculture-afid-facility-grants.shtml	Political subdivision or alliance of subdivisions. Broadband project are eligible.	Applications are accepted on a continuing basis

Next Steps: County Decisions

- Determine what role to assume in advancing County broadband goals
 - County role needs to be adopted by the County BoS
- Identify and prioritize goals, based on needs
 - Assessment findings need to be conveyed to the BoS
 - Broadband Management Team passes its recommendations to BoS for approval
- Determine incentives to offer
 - Policy Team passes its recommendations to BoS for approval
- RFP or straight to partnership?
- County chooses private partner(s)
 - The County will publish the RFP, evaluate responses, and choose (an) ISP partner(s)
 - CIT can distribute RFPs to our list of resources,
 - RFPs can be posted on the Commonwealth Connect website as well.



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