

Washington County, Virginia

Broadband Mapping Project

February 10, 2022



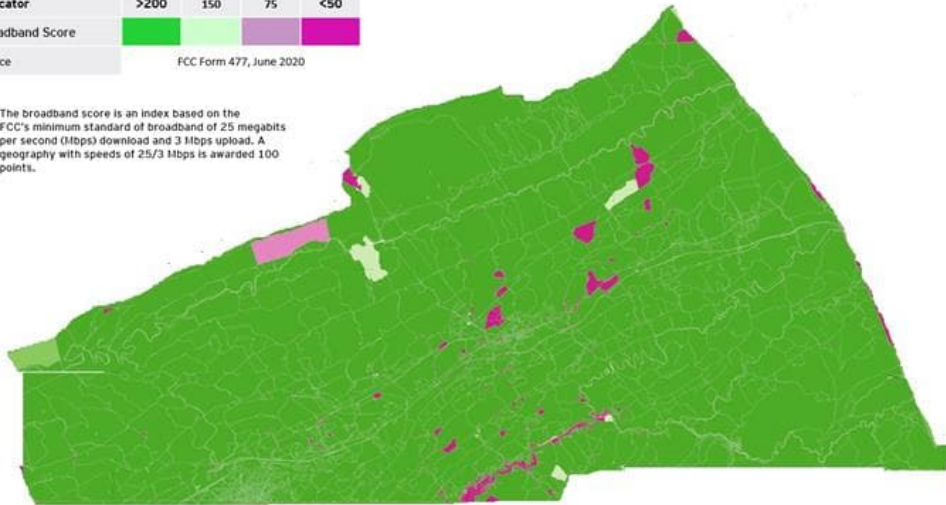
Unreliable existing data

Available coverage and speed maps from the FCC and other third-parties fail to provide granular location information and appear to vastly overstate broadband access in the County.

Fixed Broadband Deployment Summary

Indicator	>200	150	75	<50
Broadband Score	Green	Light Green	Purple	Pink
Source	FCC Form 477, June 2020			

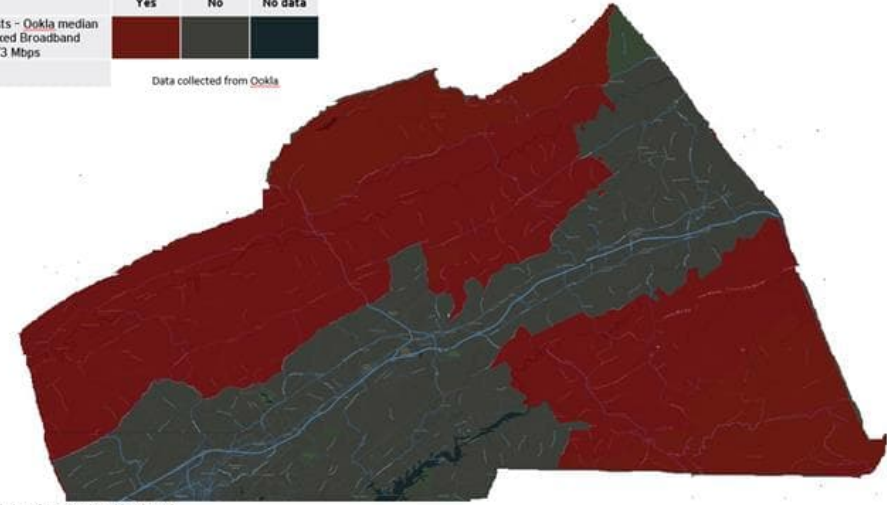
The broadband score is an index based on the FCC's minimum standard of broadband of 25 megabits per second (Mbps) download and 3 Mbps upload. A geography with speeds of 25/3 Mbps is awarded 100 points.



Source: ArcGIS

Speed Test by Ookla

Indicator	Yes	No	No data
Speed Tests - Ookla median Speeds Fixed Broadband Below 25/3 Mbps	Dark Red	Dark Grey	Dark Blue
Source	Data collected from Ookla		







Source: Indicators of Broadband Need (arcgis.com)

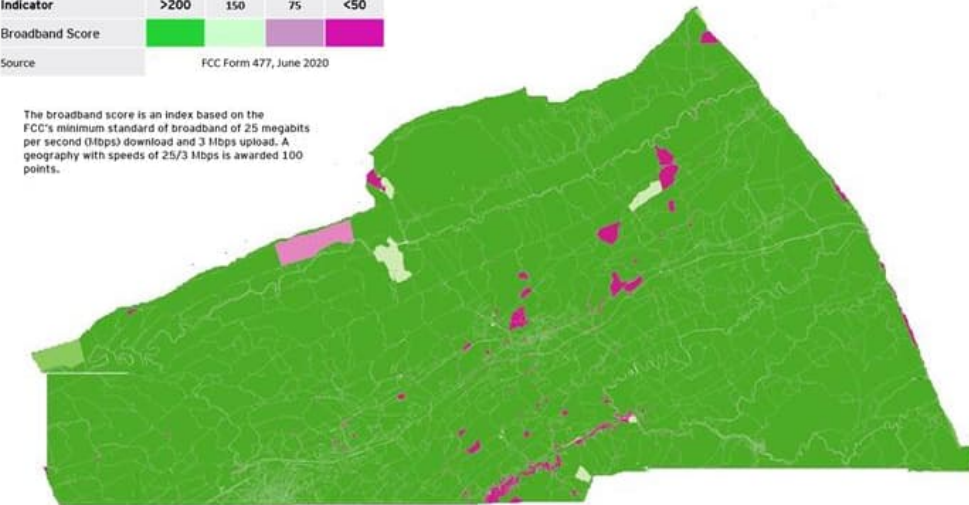
A clearer view of the County's broadband status quo

The image on the right shows the results of the County's updated analysis – providing a much more granular view of the distribution of unserved and underserved households. As bandwidth demands of commercial and educational endeavors continue to increase, many Washington County communities could struggle to keep up.

FCC Data






Indicator	>200	150	75	<50
Broadband Score				
Source	FCC Form 477, June 2020			

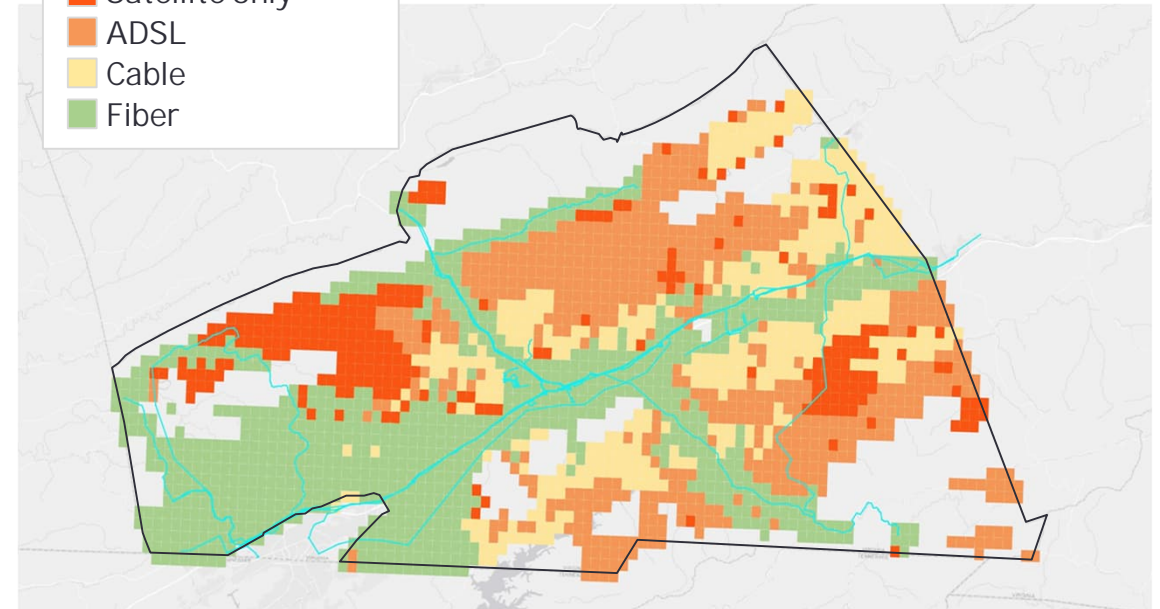
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Source: FCC

New Coverage Analysis

-  Unpopulated area
-  Satellite only
-  ADSL
-  Cable
-  Fiber



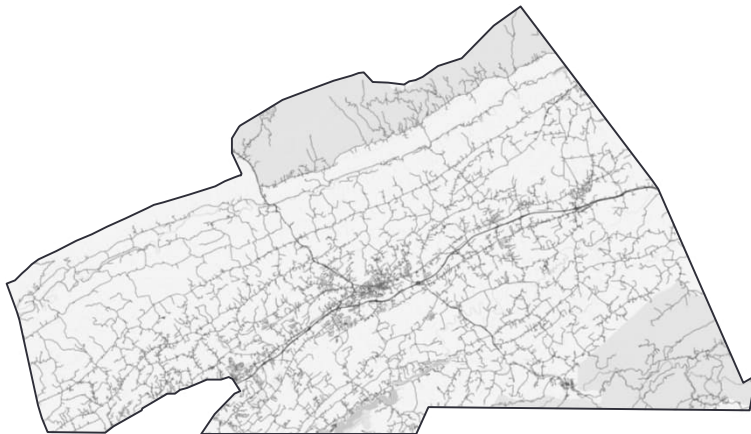
“Unserved” refers to those locations served only by satellite or ADSL internet.

“Underserved” refers to those locations without reliable access to symmetrical 100 Mbps speeds

Preliminary Reference Layers

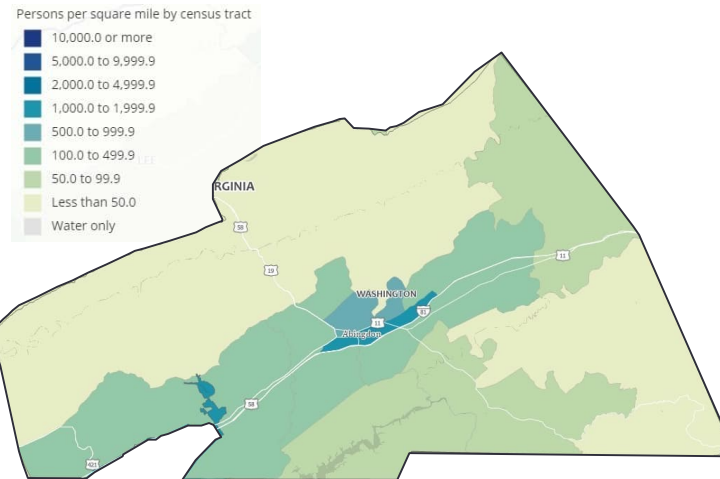
The County's existing GIS system – as well as third-party data sources – provided an initial set of reference maps that offered context and insight into existing development patterns and fiber infrastructure.

Road Network



- ▶ The road network shapefile provided by the County's existing GIS map was used to help contextualize development patterns and establish a baseline template for potential end-point users of broadband services.

Population Density

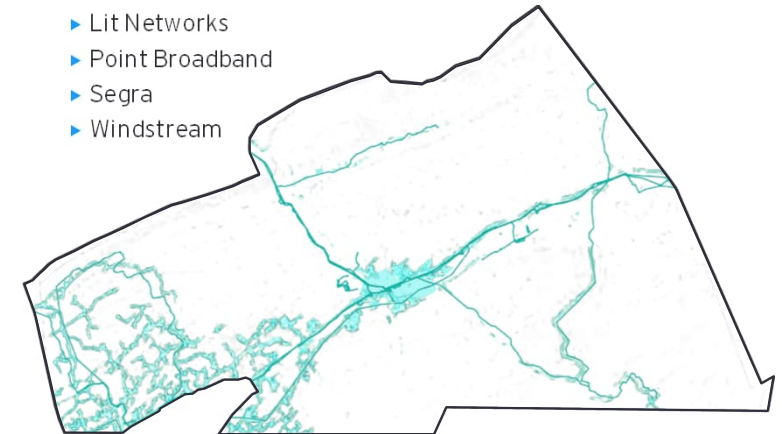


- ▶ Population density map layer was used to help analyze broadband coverage in the context of residential zones and indicate urbanized vs. rural coverage dynamics

Existing Fiber Network

Network owners and operators

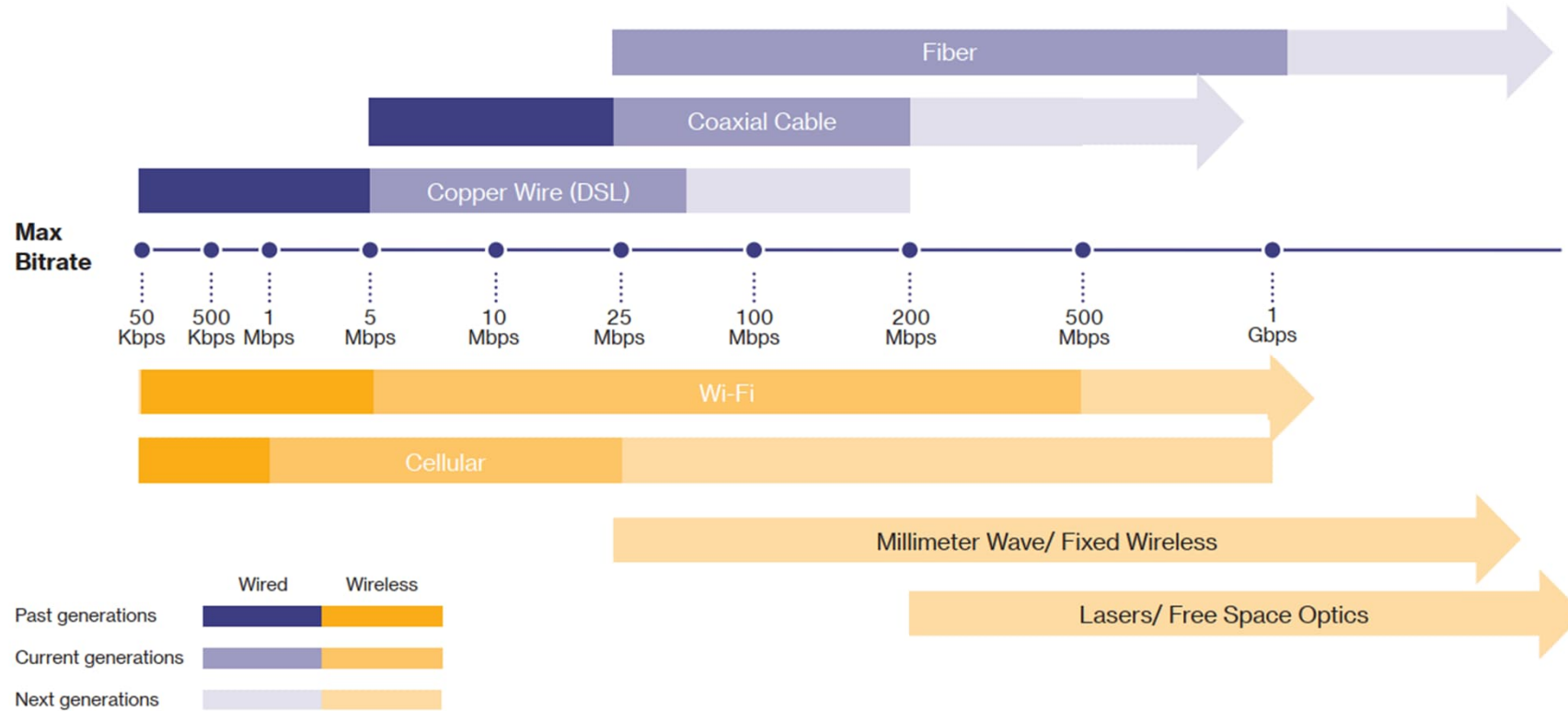
- ▶ Lit Networks
- ▶ Point Broadband
- ▶ Segra
- ▶ Windstream



- ▶ Consolidated map of existing fiber lines in the County – including all owners and providers – based upon public information combined with Point Broadband existing backbone fiber as shown in the map for the tri-county state funding grant submitted this month.

All coverage is not equal

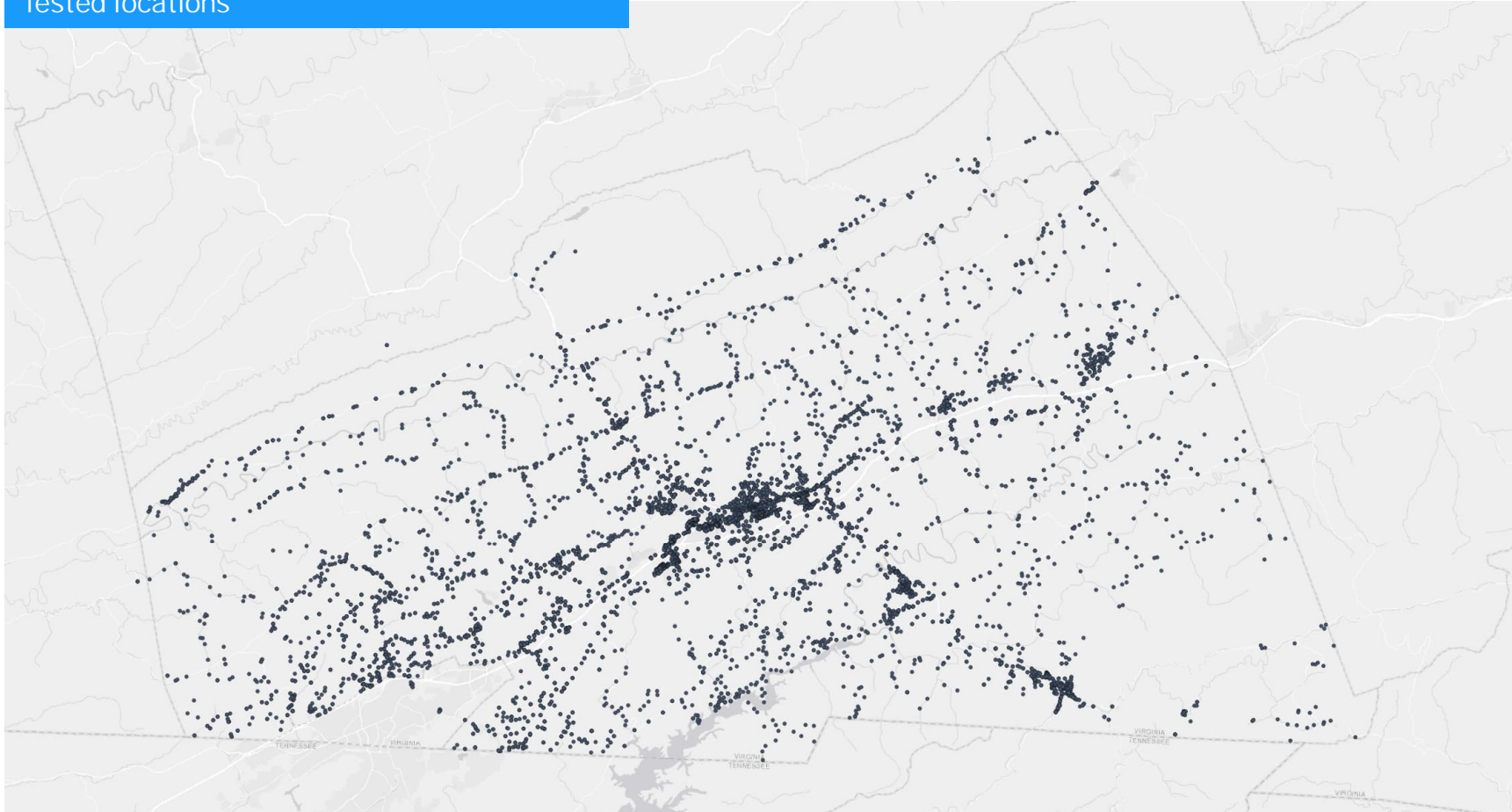
Many County residents are technically “covered” with broadband access via DSL but limited by that technology’s slower speeds. DSL lacks the capacity to handle modern data requirements.



Tested locations and database development

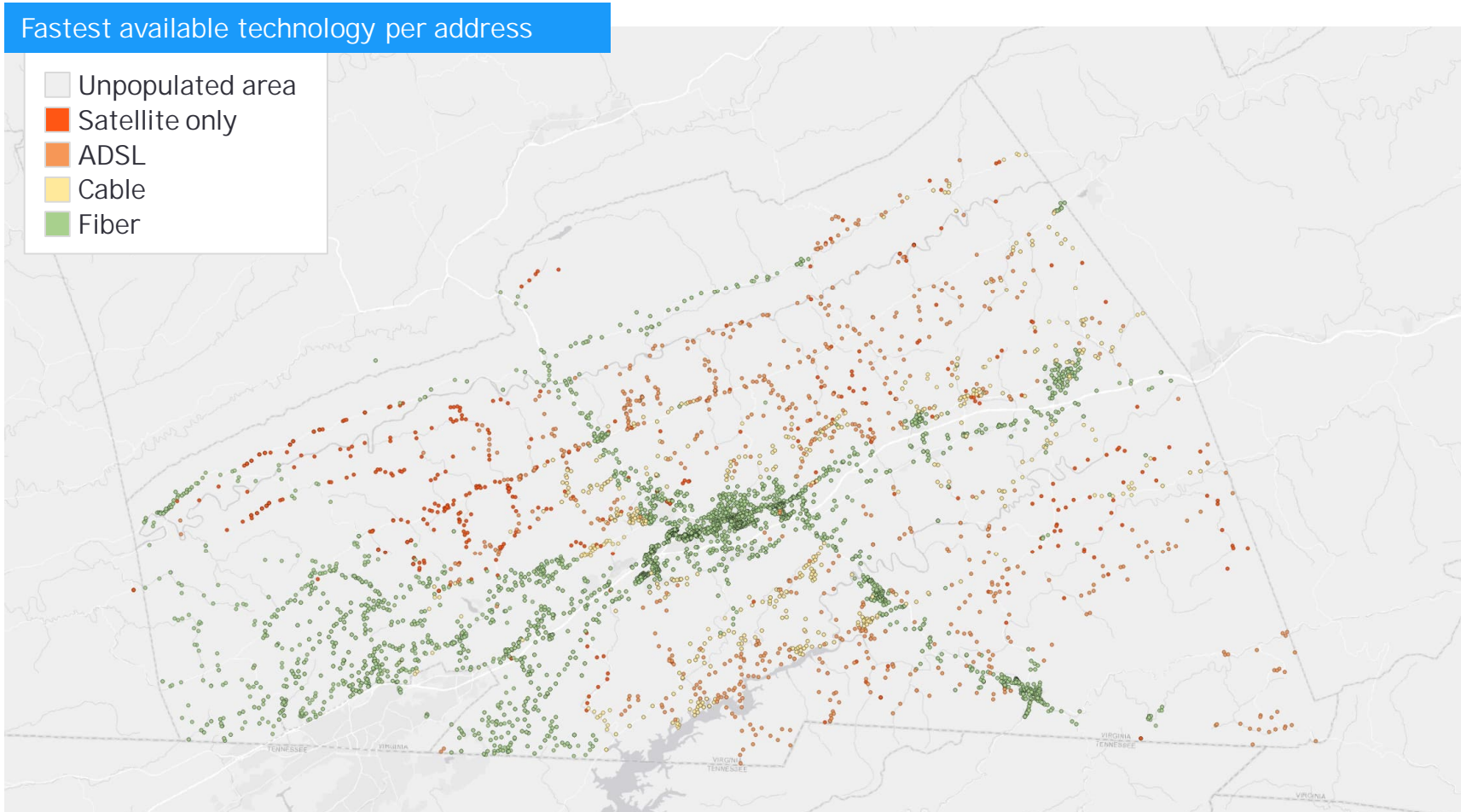
The new analysis included a point-by-point approach to understanding coverage. EY tested the availability of internet services at 4,600 homes – approximately 18% of total residences in the County. A new database containing information on location, service types, service speed and pricing was developed.

Tested locations



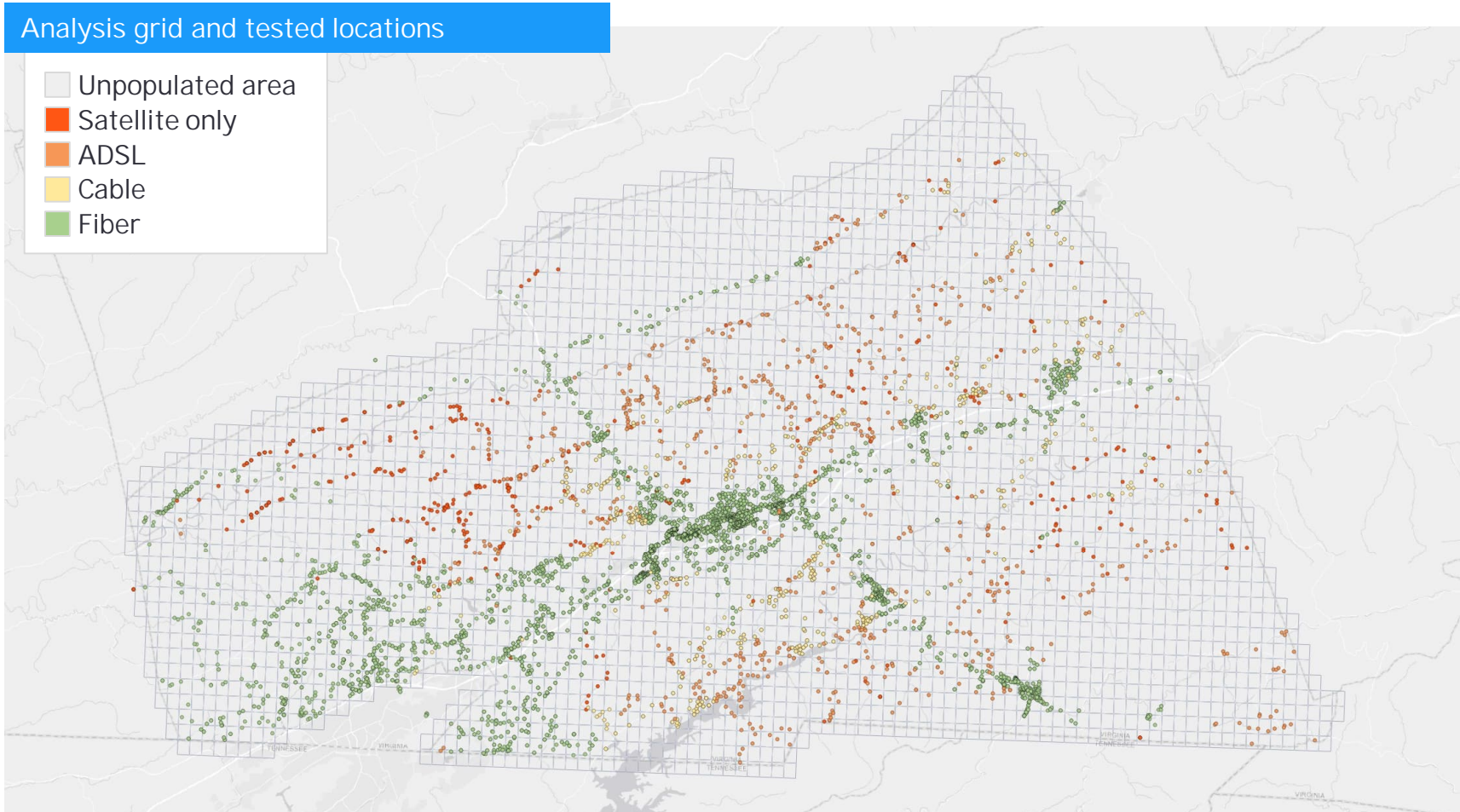
Technology type and speed

The analysis identified the fastest available telecommunications technology at each tested location.



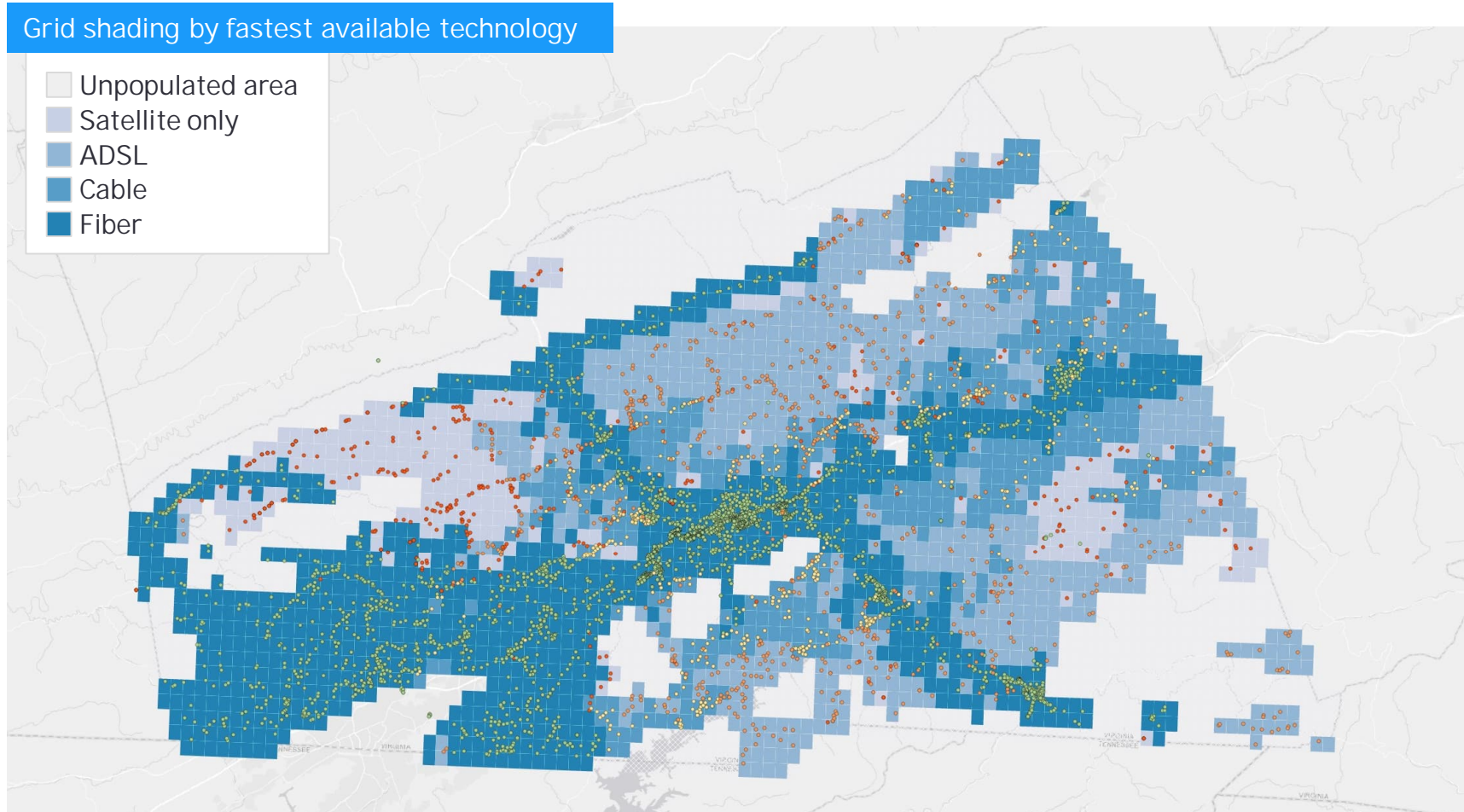
Created analysis layer (grid)

Transformed county into a grid of 1/2-mile cells so that area coverage and investment needs could be identified zonally.



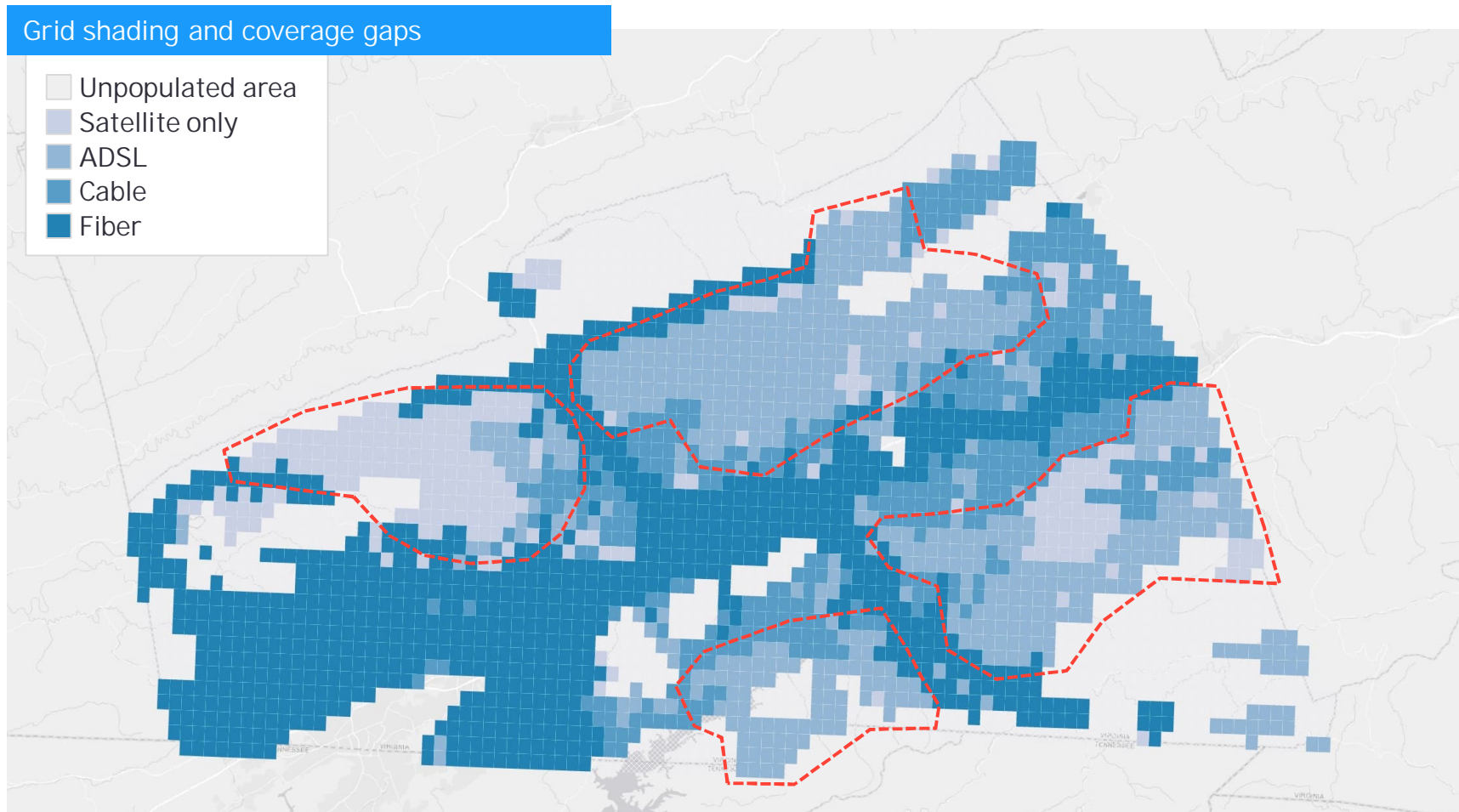
Created scoring matrix for the grid cells

The maximum observed technology/speed for addresses within each grid cell provided the basis for categorizing the area's broadband score.



Broadband coverage snapshot

Areas failing to meet current and future broadband speed standards are clearly identifiable. Population centers are reasonably covered, but large swaths rely upon satellite or ADSL.

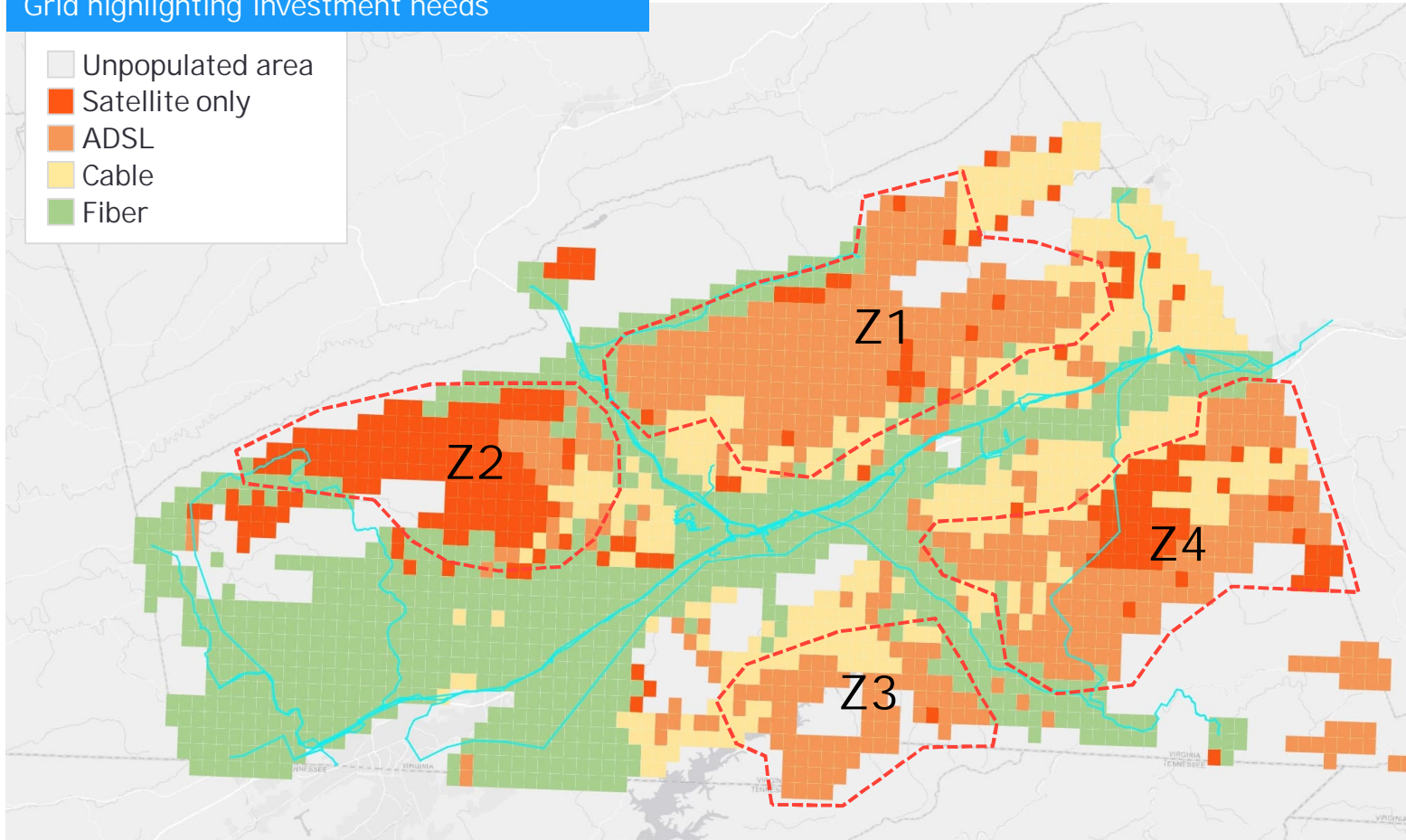


Identifying geographic coverage gaps

Providing future-proofed telecommunications capacity to the entire county will require investment in the communities highlighted in red and orange.

Grid highlighting investment needs

- Unpopulated area
- Satellite only
- ADSL
- Cable
- Fiber



Area	# of addresses	% of addresses*
Investment Zones		
Z1	1,430	5.0 %
Z2	797	2.8 %
Z3	1,347	4.7 %
Z4	1,612	5.6 %
Total	5,186	18.0 %
Countywide		
Unserved**	5,405	18.7%
Underserved***	9,975	34.6%

* 28,834 total addresses in count. The count of addresses is based upon those listed in Washington County's GIS database and have not been independently verified as active addresses with current residents

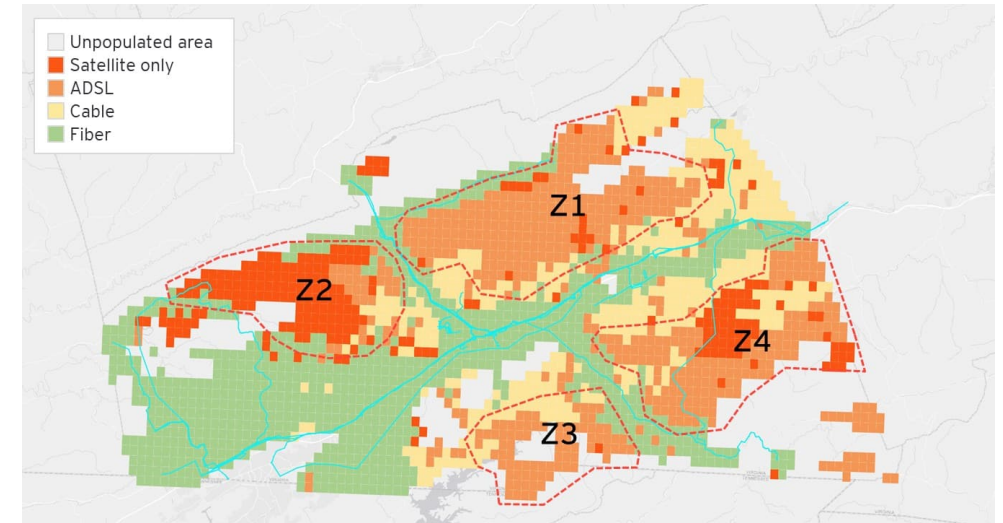
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*** "Underserved" refers to those locations without reliable access to symmetrical 100 Mbps speeds

Estimated cost to provide broadband coverage

Providing future-proofed telecommunications capacity to the entire county will require investment in the communities highlighted in red and orange.

Area	# of addresses	% of addresses*	Fiber Deployment Cost	
			Low est. (\$M)	High est. (\$M)
Investment Zones				
Z1	1,430	5.0 %	3.5	13.5
Z2	797	2.8 %	2.0	7.5
Z3	1,347	4.7 %	3.3	12.5
Z4	1,612	5.6 %	4.0	15.0
Total	5,186	18.1%	12.8	48.5
Countywide				
Unserved	5,405	18.7%	13.2	51.5
Underserved	9,975	34.6%	24.3	95.0



* 28,834 total addresses in count. The count of addresses is based upon those listed in Washington County's GIS database and have not been independently verified as active addresses with current residents

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The IIJA has a number of components which support broadband deployment

Based on information released to date¹, an estimated \$1.7 billion may be made available to the State of Virginia through the IIJA legislation. These funds, in addition to ARPA monies directed by the State to broadband initiatives, could result in over \$163 million in available funds to Washington County (based on population share) through newly enacted federal legislation.

Overview of IIJA Programs

IIJA Program	Anticipated Federal Agency	Purpose	Formula?	Duration	Est. VA Share (\$M)	Est. County Share (\$M)	Fund Distribution	Eligibility Requirements
Connectivity grant program	Commerce (NTIA)	Fund broadband in unserved (<25/3) then underserved (<100/100) areas	Formula	4 years	994.8	95.7	Discretionary to self, carriers, gov'ts or not for profits. Several models exist -- mostly grants and middle mile	Submit LOI, 5 year plan, initial proposal and final proposal; must include mapping, implementation plan, timeline and resources; must deploy funds within 4 years
Connectivity high cost area grant program	Commerce (NTIA)	Fund same in high cost areas	Competitive	Available until expended	110.7	10.7	Discretionary to self, carriers, gov'ts or not for profits	Apply and justify high costs
Affordable Internet Program-- EBB Lifeline Expansion	FCC	Subsidize households who can't afford monthly fees (\$30/mo; 5 years)	Households must apply	Available until expended	367.2	35.3	Funds go directly to carriers;	Leading jurisdictions facilitate application by households by providing strategic application support
Digital Equity Initiative	Commerce	Fund efforts to educate around digital resources	Competitive	Available until expended	71.6	6.9	Self, foundations, NGOs, community	Apply and Compete
Rural Grant and Loan Program	Dept of Agriculture	Fund and finance rural broadband	Competitive	Available until expended	52.1	5.0	Self, territories, tribes, locals, not for profits, corporations	Apply and Compete
Tribal Connectivity Program	Commerce	Fund broadband on tribal land	Formula	4 years	52.1	5.0	Tribes, locals, not for profits, corporations	TBD
Middle Mile Projects	Commerce	Improve resilience; fund middle mile projects	Competitive	Available until expended	26.0	2.5	Self, territories, tribes, locals, not for profits, corporations	TBD
Private Activity Bonds	US DOT	Grant and Loan program	Formula	Available until expended	15.6	1.5	Corporations and P3s	Structure and Apply
Total					1,690.1	162.6		

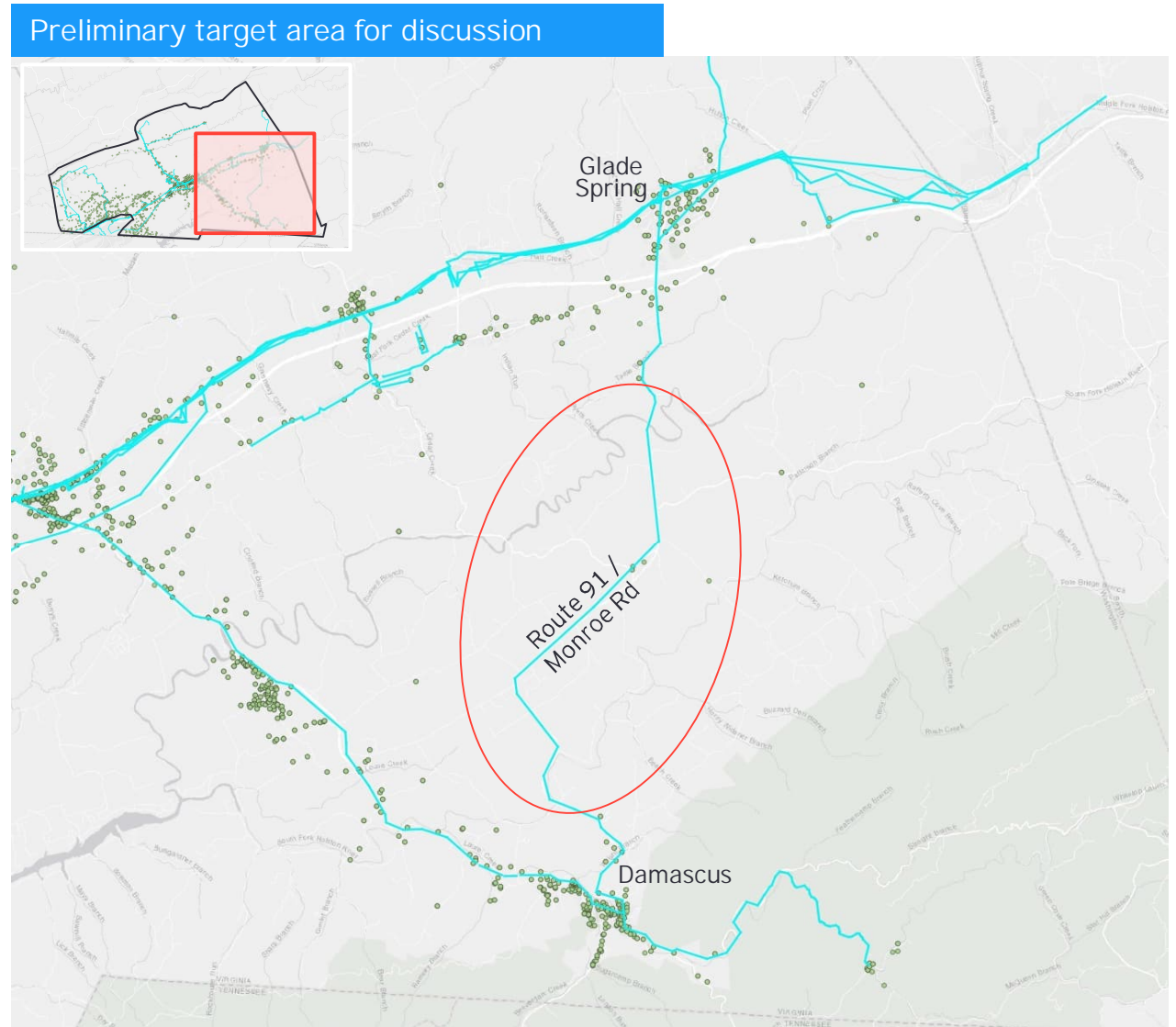
Potential coverage initiatives

	Goal	Estimated Funding Requirement	Potential Funding Source	Estimated Available Funds	Meeting Funding Need
Potential Initiative 1	<ul style="list-style-type: none"> All unserved households: Provide 100 Mbps symmetrical speed connectivity (IIJA standard) for all households without access to either cable or fiber broadband 	<ul style="list-style-type: none"> \$13 - 51 million 	<ul style="list-style-type: none"> IIJA's Connectivity Grant Program ARPA Funds 	<ul style="list-style-type: none"> \$106m IIJA Funds¹ [Remaining ARPA allocation] 	
Potential Initiative 2	<ul style="list-style-type: none"> All underserved households: Provide 100/100 connectivity (IIJA standard) for all households without access to 100 Mbps symmetrical speeds 	<ul style="list-style-type: none"> \$24 - 95 million 	<ul style="list-style-type: none"> IIJA's Connectivity Grant Program ARPA Funds 	<ul style="list-style-type: none"> \$106m IIJA Funds¹ [Remaining ARPA allocation] 	

1. Estimate based on allocation to Washington County based on population

Preliminary pilot program considerations

- IJJA funding and program objectives provide opportunity to address unserved areas in Washington County
- Pilot program in strategic area could provide early win with many benefits
 - Addressed residents who remain unserved post VATI
 - Demonstrate the validity of the County's approach to address coverage issues
 - Set a precedent for the State to follow with regards to the County when IJJA funds become available - make it harder for the State to say "no"
- Preliminary analysis shows promising area along Route 91 / Monroe Road
 - Fiber backbone already in place along corridor
 - However, minimal or no customer hookups at present
 - Opportunity to take advantage of existing fiber infrastructure and reduce project cost compared to greenfield area
 - Ownership of fiber line still to be clarified
- Further discussion needed to establish objectives for any potential pilot project and consider possible locations



Potential next steps

- ✓ Understand County ARPA funds available for broadband
- ✓ Open discussions with the State to articulate the County's position with regards to IIJA funding
- ✓ Open discussions with carriers to structure projects