

BEAD Program: A Framework to Allocate Funding for Broadband Availability

State Broadband Report: West Virginia

February 2, 2023





1 Eligible Locations

How many unserved/underserved locations are eligible for BEAD funding?

29%
262K LOCATIONS

OF WEST VIRGINIA LOCATIONS LACK HIGH-SPEED BROADBAND IN JUNE 2022
VS. 12% STATE/TERRITORY AVERAGE

UNSERVED LOCATIONS, JAN. 2024



81.1K
LOCATIONS

Are estimated to lack broadband access at 25/3 Mbps

UNDERSERVED LOCATIONS, JAN. 2024



60.8K
LOCATIONS

Are estimated to lack broadband access at 100/20 Mbps

These locations are primarily in rural areas and are eligible for BEAD funding to deploy broadband service

2 Total Funding

How much funding is the State/Territory estimated to receive?

\$950M

IN BEAD FUNDING IS ESTIMATED TO BE GRANTED TO WEST VIRGINIA
VS. \$743M STATE/TERRITORY AVERAGE

ESTIMATED BEAD FUNDING:

Minimum Allocation	\$100M	1.9% of \$5.3B
High-cost Allocation	\$112M	2.6% of \$4.2B
Remaining Funds Allocation	\$739M	2.3% of \$33B

Total BEAD Funds	\$950M
Provider Match	\$407M
Total Capital	\$1.4B

3 Deployment¹

How many locations can be covered with fiber and other technologies?

\$481M-\$713M

OF BEAD FUNDS IS REQUIRED TO BUILD HIGH-SPEED BROADBAND TO ALL ELIGIBLE LOCATIONS

DEPLOYMENT SCENARIOS:

Baseline Fiber	Maximum Fiber
100% LOCATIONS REACHED	86% FIBER LOCATIONS
86% FIBER LOCATIONS	100% LOCATIONS REACHED
100% LOCATIONS REACHED	100% FIBER LOCATIONS
\$888M TOTAL CAPITAL COST	\$1.1B TOTAL CAPITAL COST
\$469M REMAINING BUDGET	\$237M REMAINING BUDGET

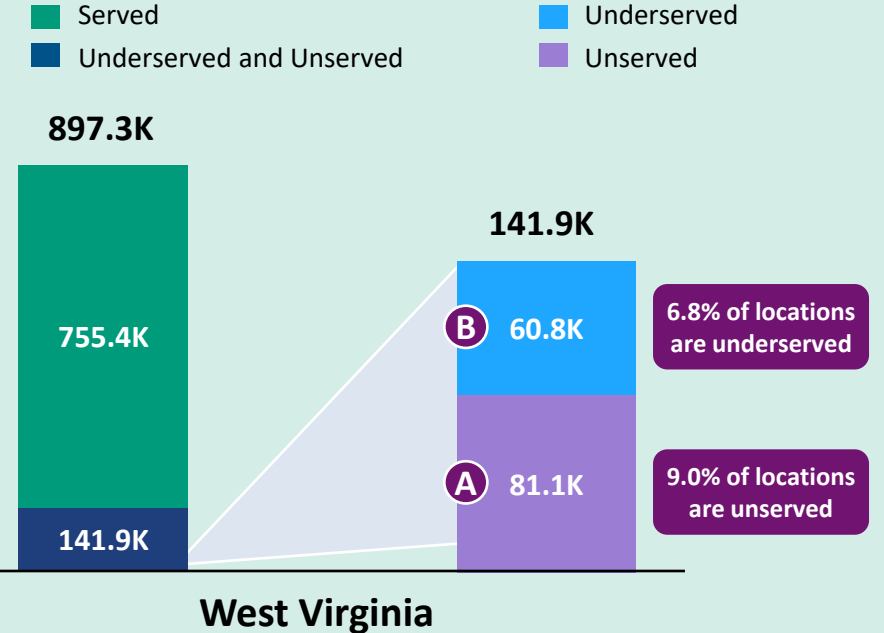
West Virginia | Estimated Eligible Locations for Funding Allocation and Project Awards



June 2022 FCC Broadband Locations¹

	Unserved (less than 25Mbps/3Mbps)	Underserved (less than 100Mbps/20Mbps)
	184.8K	77.5K
— Subsidy Program Funded Locations ²	85.1K	16.7K
— Incremental Build ³ (13% annual build, for 18 months)	18.6K	--
= Jan. 2024 Estimated Eligible Locations	81.1K (A)	60.8K (B)

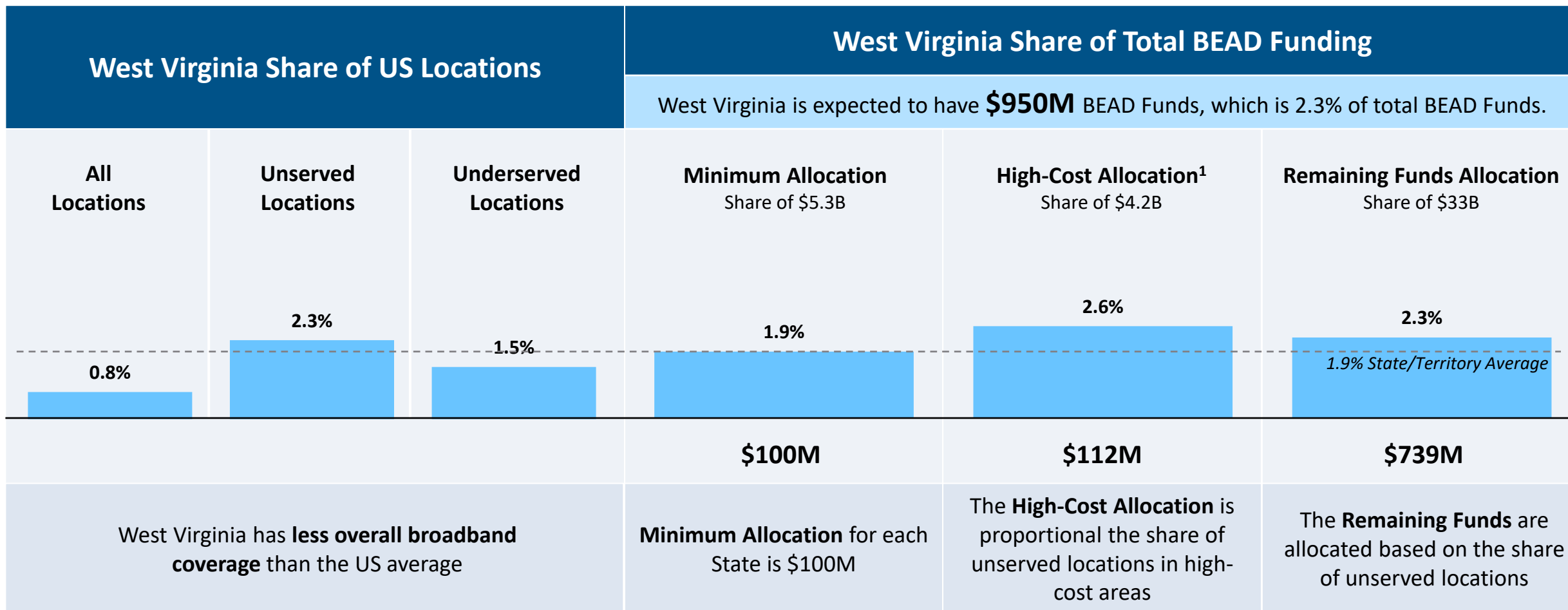
Location Distribution at Beginning of 2024



We estimate 16% of locations will be eligible for BEAD Funding in West Virginia

1. Final award will be made using updated FCC map data in June 2023 following the fabric and availability challenge process
 2. Locations in census blocks with "commitments" to receive support from Rate of Return and RDOF programs, excl. RDOF award locations for Starlink and LTD
 3. Given the uncertainty around the magnitude of locations moving from unserved to underserved, we have not made incremental builds adjustments to underserved locations
 Source: Cartesian, FCC National Broadband Map (June 2022 data, released in November 2022)
 Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.

West Virginia | Estimated BEAD Funding



1. High-Cost Allocation is a share of \$4.2B to be used for high-cost locations (10% of the total program funds). We estimate high-cost areas comprise the top 10% of unserved census blocks by fiber deployment costs across the U.S. Our model ranks the cost to serve census tracts to identify the top 10% most costly tracts. The high-cost allocation prorates the \$4.2B based on the State's # of locations in the tract. The NTIA will define high-cost areas in future guidance.

Source: Cartesian FCC National Broadband Map (June 2022 data, released in November 2022; data will change as a result of the fabric and availability challenge process and new build)

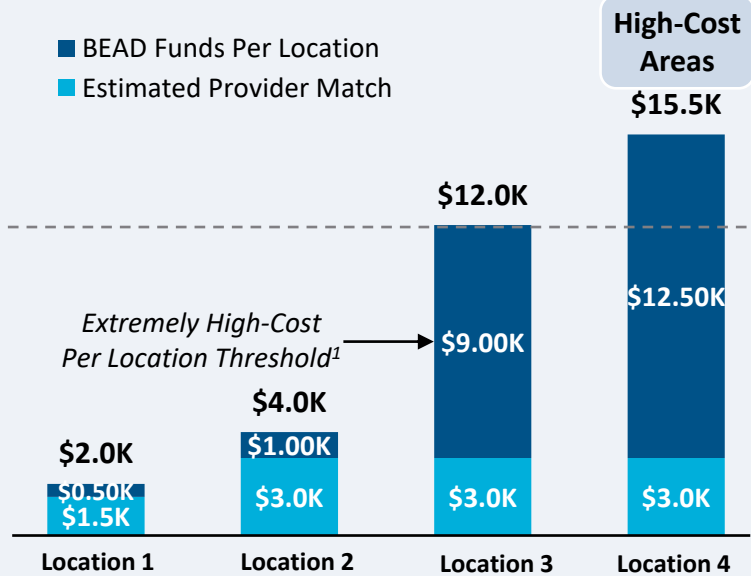
Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.

West Virginia | Estimated BEAD Funding & Provider Match

Provider Match Examples

Total Deployment Cost per Location

■ BEAD Funds Per Location
■ Estimated Provider Match

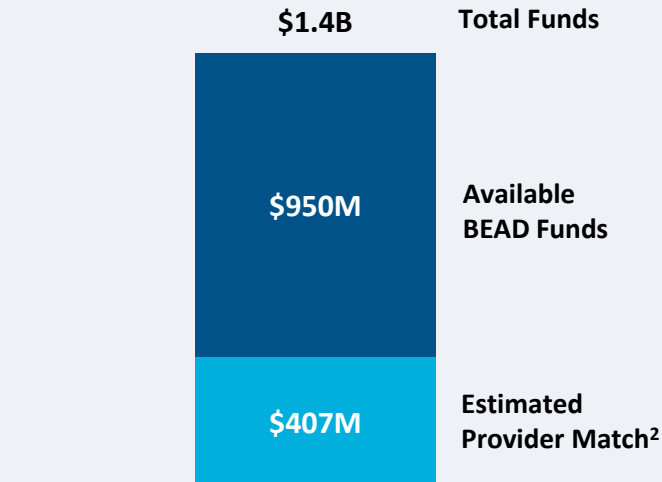


Provider Match %

75%	75%	25%	19%
-----	-----	-----	-----

To be conservative, we assume provider match amounts have a maximum of 75% and a minimum of 25%, except in high-cost areas

Total Capital Available - West Virginia



\$1.4B in total capital is estimated to be available to serve unserved/underserved West Virginia locations (using both BEAD funding and provider match amounts)

Provider Match - West Virginia

Total Estimated
Provider Match:

\$407M

÷ Total Estimated
Eligible Locations:

141.9K

= Average
Provider Match:

\$2,868
PER LOCATION

We estimate the average provider match will be \$2,868 – provider matches will be 75% where cost to deploy is less than \$4K

1. The model uses a \$9k threshold, however, States/Territories will individually need to determine their appropriate extremely high-cost threshold

2. In reality, providers will determine the viable level of match funding for each project using a business case model. They will be willing to contribute a greater match in some locations and less in others. Locations which are hardest to serve may need to be fully funded by BEAD with no match. Competitive bidding should drive provider matches towards this level.

Source: Cartesian, FCC National Broadband Map (June 2022 data, released in November 2022; data will change as a result of the fabric and availability challenge process and new build),

Benton

Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.

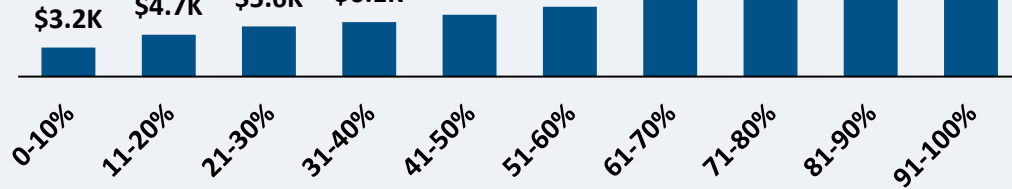
West Virginia | Cost to Deploy Fiber by Decile

CAPEX Fiber Deployment Cost per Location Segmented by Cost Deciles¹

Unserved Locations

Overall Average Cost per Location: \$8,419

\$37.3K

Extremely High-Cost Threshold +
Max Provider Match (\$12k total)

Average Tract Density (Location per sq. Mile)

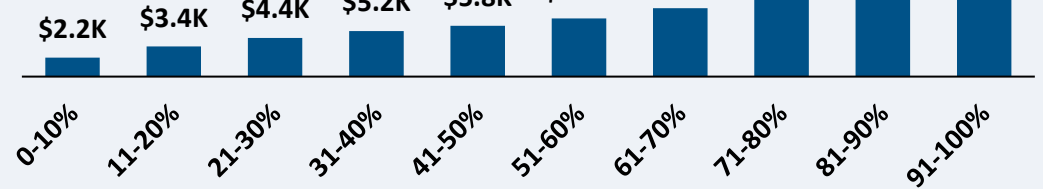
62	17	12	18	14	11	11	8	8	11
----	----	----	----	----	----	----	---	---	----

81.1K Locations

Underserved Locations

Overall Average Cost per Location: \$7,196

\$19.3K

Extremely High-Cost Threshold +
Max Provider Match (\$12k total)

Average Tract Density (Location per sq. Mile)

118	69	69	13	11	18	10	16	10	8
-----	----	----	----	----	----	----	----	----	---

60.8K Locations

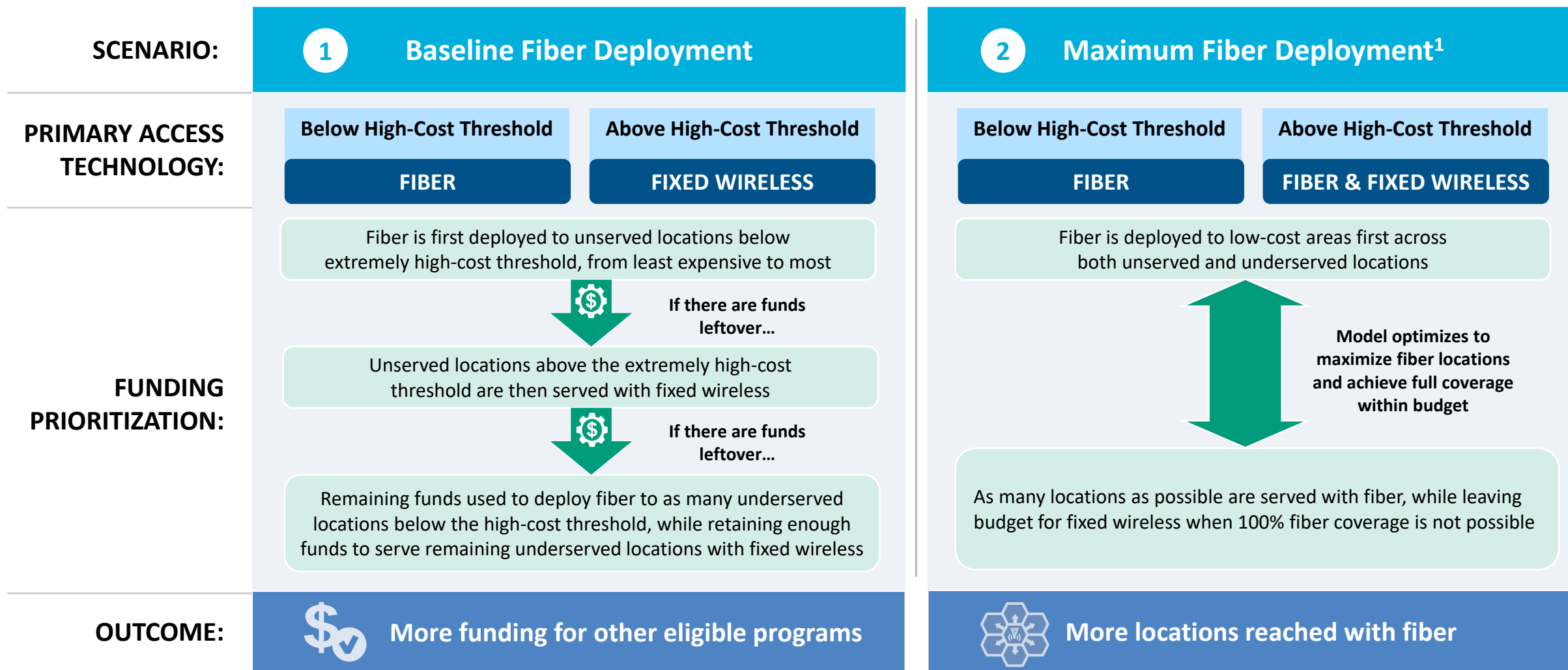
Over 80% of locations are estimated to fall below the High-Cost Threshold + Provider Match

1. Chart values are average cost per location for each decile bucket

Source: Cartesian, FCC National Broadband Map (June 2022 data, released in November 2022; data will change as a result of the fabric and availability challenge process and new build)

Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.

West Virginia | Fiber Preferencing Scenarios



1. Scenario 2 does not include an extremely high-cost threshold

Source: Cartesian

Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.

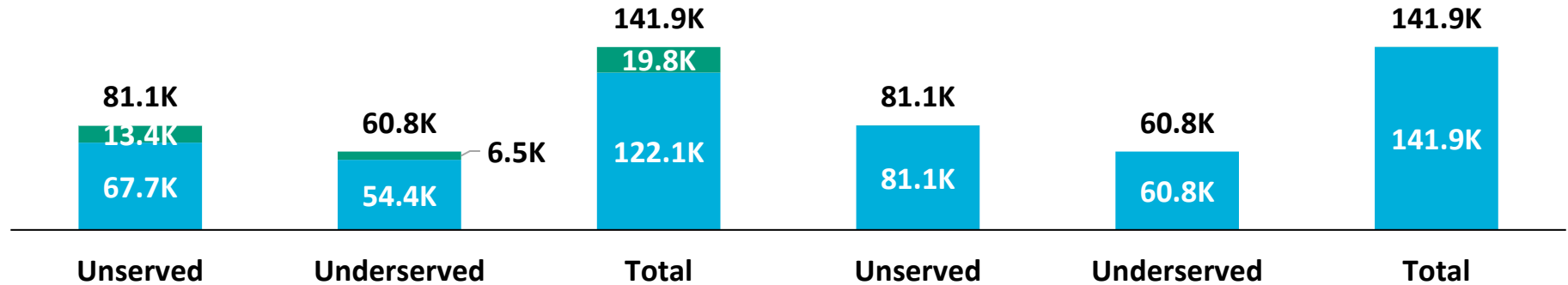
West Virginia | Scenario Analysis Results

SCENARIO:

1 Baseline Fiber Deployment

2 Maximum Fiber Deployment

Fixed Wireless
Fiber

Capex Required per Locations¹

\$6,508

\$5,920

\$6,256

\$8,412

\$7,196

\$7,891

BEAD Funds Available to State

\$950M

\$950M



Estimated Provider Match

\$407M

\$407M



Total Available Capital

\$1.4B

\$1.4B



Capex Required to Build

\$888M

+\$232M

\$1.1B



Remaining Funds

\$469M

\$237M

% of Locations Reached

100%

100%

% of Locations Reached with Fiber

86%

+14%

100%

1. Funding to deploy fiber before the maximum \$3k provider match per location

Source: Cartesian, FCC National Broadband Map (June 2022 data, released in November 2022; data will change as a result of the fabric and availability challenge process and new build), Benton

Confidential and Proprietary — Copyright © 2023 Cartesian, Inc. All rights reserved.



Funding Summary

West Virginia is expected to receive

\$950M in BEAD funding



\$407M in estimated provider matching

We estimate the funding is sufficient to reach all of West Virginia's 141.9k eligible locations with high-speed broadband



Key Findings

West Virginia appears well positioned to reach all eligible premises and have funding for other BEAD eligible programs

A Baseline Fiber Deployment...	vs.	Maximizing Fiber...
<ul style="list-style-type: none">Leaves \$469M additional funds for affordability programsReaches 86% of locations with fiberRequires 14% to be reached with other tech.		<ul style="list-style-type: none">Leaves \$237M additional funds for affordability programsReaches 100% of locations with fiberRequires 0% to be reached with other tech.

States/Territories will set their own extremely high-cost threshold and may choose a threshold or funding paradigm different from these two scenarios

West Virginia | ACA Connects Members

Member Name
AA Communications, LLC
Armstrong
Atlantic Broadband
Blue Devil Cable TV, Inc.
CAS Cable
Citynet Philippi, LLC
Digital Connections, Inc. dba Prodigy
Foothills Broadband Aka Foothills Rural
Hardy Telecommunications, Inc.
Inter Mountain Cable, Inc.
Massillon Cable TV, Inc.
Mtn Infrastructure, Inc. dba Segra
Otelco Telecommunications, LLC
Point Broadband, LLC
QCOL, Inc.
Shenandoah Cable Television, LLC
TDS Telecom



www.acaconnects.org



www.cartesian.com

GRANT SPELLMEYER
CEO, ACA CONNECTS
GSPELLMEYER@ACACONNECTS.ORG

MICHAEL DARGUE
VICE PRESIDENT, CARTESIAN
MICHAEL.DARGUE@CARTESIAN.COM

SAMUEL KORNSTEIN
VICE PRESIDENT, CARTESIAN
SAMUEL.KORNSTEIN@CARTESIAN.COM