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Navigating the BEAD Weeds - Project Areas - November 2023

New York Law School

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PROJECT AREAS

November 2023

ACLP
ADVANCED COMMUNICATIONS LAW & POLICY INSTITUTE
at New York Law School

NEW YORK LAW SCHOOL

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1. SUMMARY

- A key element of state BEAD grant programs is how states define their project areas. Project areas (PAs) are where ISPs will use BEAD funding to build new networks. PAs can be as small as a single location or as large as a county or Census tract.
- States could allow applicants to define their own PAs. However, to date, most states have elected to dictate their own PAs by using a range of geographic unit systems that bear little, if any, relationship to existing networks. For example, some states are seeking to define PAs by using the pre-existing borders associated with Census Block Groups, county borders, or school districts, among others. This means that PAs in a state might encompass all unserved and underserved locations in a county or across a school district.
- The following explores why states should select the most granular system that is administratively feasible. Higher levels of granularity – i.e., PAs that are as small as a single location – provide greater opportunity for efficient, targeted buildouts and gives the most flexibility to applicants both large and small.
- States may believe that PAs that are very large, like those set at the county level, might be easier for them to administer, but in practice, large PAs might be too expansive – and expensive – for applicants to serve.
- Using standardized, granular units from the Census Bureau, such as Census Blocks, to design PAs is probably the most efficient approach for states seeking off-the-shelf solutions.

2. INTRODUCTION

Once their BEAD grant programs are approved by NTIA, states will begin accepting applications from internet service providers (ISPs) for funding in support of broadband network buildout in unserved and underserved areas. These applications will require ISPs to identify where, and to whom, their BEAD-funded networks will be available. In theory, these project areas (PAs) could be as small as a single location, or they could be much larger, encompassing all the unserved locations in a county.[1]

States could let applicants define their own PAs. As Texas state broadband officials have observed, this seems like the most commonsense approach because "eligible applicants themselves have the best knowledge of how far and where they have the most ability and willingness to expand and the task of defining and proposing expansion plans can be left, at least initially, to eligible applicants themselves."[2] From an administrative standpoint, however, some states are concerned that they could be overwhelmed with having to "de-duplicate" proposals with overlapping PAs.

The other option is for states to define PAs themselves. States can do this by using "off-the-shelf" geographic units like Census Blocks or Census Block Groups. In Ohio, for example, the

state will sort unserved locations by Census Block Group (CBG) and require winning bidders for that PA to bring service to every unserved location in the CBG.[3]

CBGs are one of several different geographical units that states have chosen for defining their BEAD PAs. Choosing which unit is best is no easy task. The pool of options is wide, from existing political boundaries like counties and school districts, to geographic unit systems available from federal agencies like the U.S. Census Bureau. These approaches are discussed in more detail below.

Other states, however, are creating bespoke PAs using different methods. For example, Oklahoma seeks to create custom-made Network Expansion Territories (NETs) that will cluster "nearest unserved/underserved and unfunded [locations] which have a positive estimated [net present value]."[4] Michigan will "utilize hexbins to divide the state into hexagonal geographic units, each with a diameter of three miles across opposing vertice."[5]

3. ALLOWING STATES TO DEFINE BEAD PROJECT AREAS IS RESULTING IN AN INEFFICIENT PATCHWORK

As of November 15, 48 states had made public their plans for defining PAs. The following chart attempts to summarize these disparate approaches by sorting them into four very broad categories.

Approach	States
Let Applicants Define their Own PA	IA, MN, MO, ND, SD, TX
State to Define Using Established Geographic Units (e.g., CBGs, county or municipal boundaries, etc.)	AL, AR, CO, CT, DE, GA, HI, IN, KY, MA, MT, NC, NH, OH, PA, RI, SC, UT, WY
State to Define by Using Alternative Approach (e.g., school districts, a bespoke design)	AZ, IL, KS, LA, MI, NE, NJ, NM, NV, NY, OK, OR, TN, VA, VT, WI, WV
TBD (state has yet to pick its approach)	CA, ID, MD, ME, MS, WA

Within each category, a wide variety of approaches are being considered. For example, among the 17 states seeking to use an alternative approach to define PAs:

- Illinois will identify Project Area Units (PAUs), which will encompass a group of unserved and underserved locations, and permit applicants to piece together PAs using these pre-defined PAUs.[6]

- Kansas has proposed to define project areas "by Unified School District (USD) borders in place June 1, 2023."[7] Oregon has proposed a similar approach.[8]

- Louisiana will sort its 230,000 unserved and underserved locations into approximately 2,000 sub-project areas using "a mix of census block groups and census blocks, depending on the numbers of eligible locations in different local areas."[9]

- Michigan will use hexbins, a system of equally sized hexagonal areas repeated across the state.

- Nevada will sort BEAD eligible locations into Regional Project Areas (RPAs), each of which will differ in size.[10]

- New York has proposed designing its own Grant Areas that will "be released in the form of polygons or descriptions of established geographic boundaries (such as counties), accompanied by lists of eligible locations."[11] Several other states will take a similarly bespoke approach to designing PAs from scratch. Oklahoma, for example, will create custom-made Network Expansion Territories (NETs), while New Jersey will create Project Area Building Blocks,[12] and New Mexico will design Project Area Units.[13]

- West Virginia will "create and publish a set of "Target Areas", which are pre-defined groupings of targeted locations. [The state] has created these through a clustering method that seeks to create approximately homogeneous and contiguous groupings of targeted locations."[14]

4. FACTORS INFLUENCING STATES' CHOICES FOR DEFINING PROJECT AREAS

When choosing whether to pre-define PAs or allow applicants to define their own, state broadband offices must balance several, often opposing, factors:

- **Universal Service.** Fundamental to each state's BEAD program is ensuring that all unserved locations get access to reliable, high-speed broadband. To do so, project areas must encompass all such locations in a way that best enables subgrantees to apply, get funded, and provide service to them.
- **Granularity.** The geographical unit system must allow ISPs to define PAs with enough specificity to design feasible networks and apply for funding. If they are too broad, providers that may be able to efficiently serve part of an area but not the entire area will likely not apply. The more granular the system selected, the more likely its units will have consistent density of serviceable locations and similar physical characteristics.
- **Complexity of Administration.** The complexity of accepting applications, resolving overlapping project areas, and otherwise handling the grant process increases with the complexity of the PA method chosen. For example, handling applications defined at the county level might appear to be easier administratively and computationally

than one involving smaller units. However, as previously noted, PAs that are too big could discourage applicants.

- **Meaningfulness.** The system of units chosen is more powerful if its units are meaningful rather than arbitrary shapes on a map. For example, breaking up a state into units based on physical terrain and political boundaries provides areas that more closely reflect buildout dynamics compared to dividing a state into a grid of equally sized squares.

5. A SURVEY OF "OFF-THE-SHELF" OPTIONS FOR SETTING PROJECT AREAS

The most accessible options for defining PAs leverage existing geographic units developed and used by the U.S. Census Bureau. At the sub-county level, the most used units are Census Blocks, Census Block Groups, and Census Tracts. The Census Bureau's geographic units are convenient to use for a number of reasons, including easy availability of data files, the fact that they are based on both physical (e.g., roads, waterways) and non-physical (e.g., property lines, political boundaries) features, that they do not cross county boundaries, and that they cover 100% of all land in the U.S., meaning no locations will be left out.

The Census Bureau's units are built upon the basic unit of Census Blocks, which are aggregated into larger units like block groups and tracts. Except for minor changes, blocks are re-defined every ten years, in tandem with the Decennial Census. Since this was last performed for the 2020 Census, these units will conveniently (for BEAD purposes) be largely unchanged through 2030.

Usage of the Census's geographic unit systems is commonplace across many disciplines. For example, Census Blocks are how location information has been provided in public data from both the FCC's old Form 477 program and its new BDC initiative.

The primary tradeoff involved in selecting a system is between granularity and complexity of administration. *A sensible guiding principle for states is that they should select the most granular system of geographic units for grantmaking that they can confidently handle administratively*. Assuming that Census Blocks are the most granular system being considered, all the higher levels of aggregation should be considered a compromise, wherein some degree of granularity was sacrificed to reduce complexity.

Discussed below are several candidates for geographic unit systems that could be used to administer BEAD grants. Seneca County, NY is offered as an illustrative example of how these units translate into the real world. Seneca County was chosen because its density and layout best illustrate the distinctions between each system. (As noted above, New York has chosen to eschew off-the-shelf approaches and will instead design its own PAs.)

The following table summarizes the number of each unit, both in the state and in Seneca County, NY:

Geographic Unit	New York	Seneca County
Counties	62	1
Census Tracts	5,411	11
Census Block Groups	16,070	32
Census Blocks	288,819	1,766

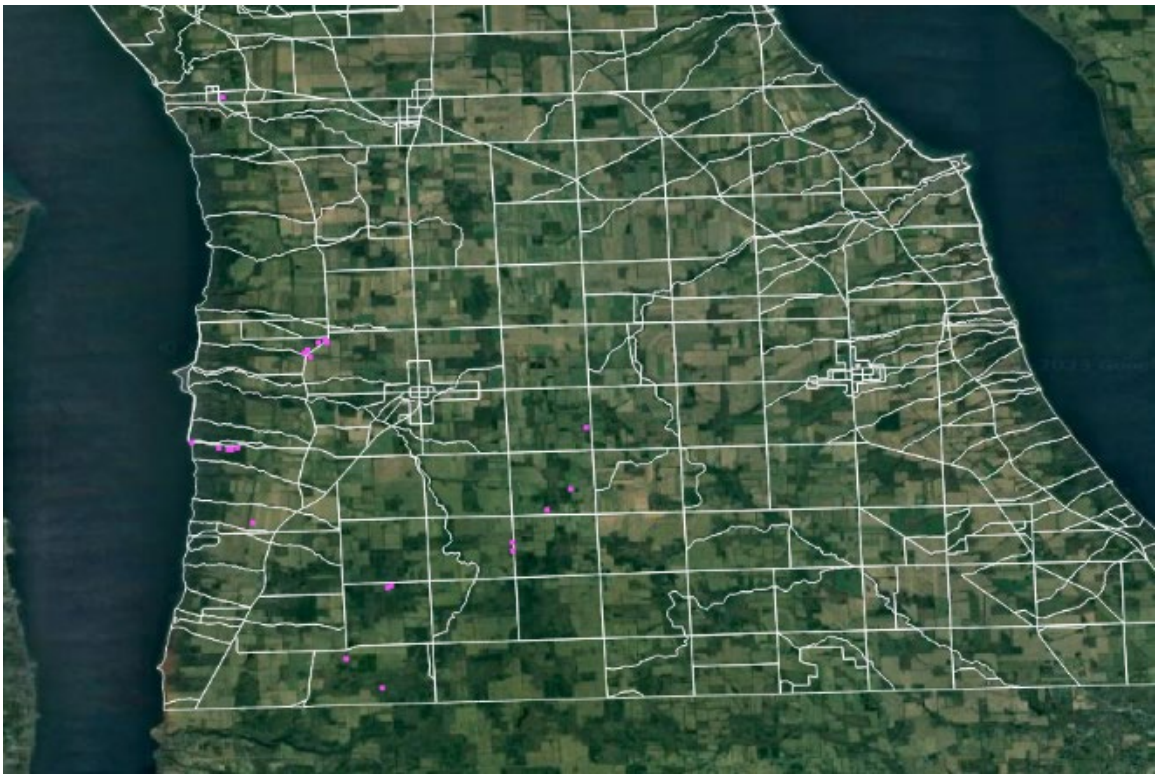
5.1. CENSUS BLOCKS

Census Blocks (CBs) provide the highest level of granularity that is reasonably usable by a state that wishes to define its own PAs. With 288,819 Census blocks in the state of New York, choosing CBs would also result in the highest level of administrative complexity for state broadband offices among the candidate systems (outside of permitting ISPs to define their own PAs). Resolving overlapping projects could involve thousands of CBs. This would be further compounded by complex network layouts wherein providing service in one block could be contingent on service in other blocks. This means that even the omission or addition of a few blocks to reconcile overlapping applications could invalidate network designs or business cases, necessitating time-consuming collaboration between broadband offices and competing ISPs.

On the other hand, the high level of granularity means that CBs are the most likely system to offer a consistent density and geography within each unit. Most ISPs, by virtue of years of Form 477 reporting and the even more complex BDC reporting, are experienced with this level of complexity. Among the system options, the high granularity of CBs best enables carefully tailored applications that efficiently target unserved locations and gives ISPs the greatest possible flexibility in preparing their applications.

As shown in Figure 1, CBs provide a very high level of granularity, allowing unserved areas (in magenta) to be precisely defined. In urban areas, blocks can be as small as city blocks. There are 288,819 CBs across the state of New York.

Figure 1 – Detailed View of Census Blocks in Southern Seneca County



5.2. CENSUS BLOCK GROUPS

The first step up from CBs are Census Block Groups (CBGs), which, as the name suggests, are collections of CBs. Specifically, CBGs contain all blocks within a Census Tract (discussed below) that have the same first digit of their four-digit block number and are "generally defined to contain between 600 and 3,000 people."[15] Just like CBs, CBGs do not cross state or county lines.

Using CBGs to define PAs could provide a useful compromise between using CBs and allowing applicants to define their own PAs without completely erasing granularity. In New York, there are 16,070 block groups, roughly one CBG per 18 CBs. (On average across the U.S., there are about 34 CBs per CBG.[16])

As shown in Figure 2, CBGs offer a compromise, providing less granularity while still allowing meaningful groupings of unserved locations (in magenta), even in low-density areas like southern Seneca County.

Figure 2 – Detailed View of Census Block Groups in Southern Seneca County

5.3. CENSUS TRACTS

The next level up from CBGs are Census Tracts (CTs), which further aggregate CBs. Tracts are intended by the Census Bureau to remain stable over time, allowing for consistent comparisons to be made across decades of data. Tracts tend to have "between 1,200 and 8,000 people, with an optimum size of 4,000 people."[17]

In New York, there are 5,411 CTs, roughly one CT for every 3 CBGs or one CT for every 53 CBs. This means that the step down in complexity between CBGs and CTs is smaller than the drastic 18-to-1 decrease between CBs and CBGs. For states that would be able to handle administration at the CT level, there appears to be little downside to stepping down to the CBG level, which yields a bit more granularity and flexibility without a significant increase in complexity.

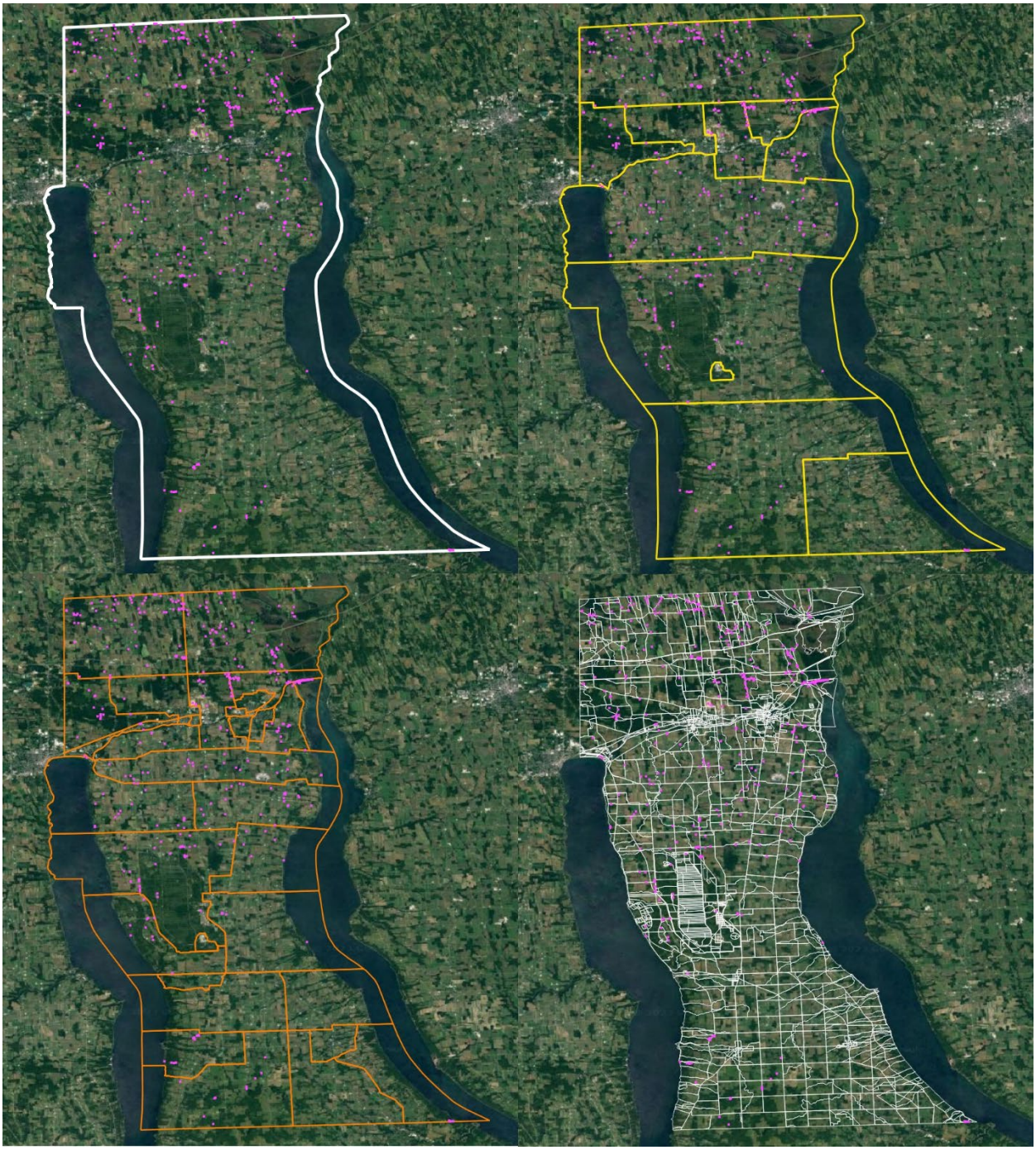
Figure 3 – Detailed View of Census Tracts in Southern Seneca County

5.4. COUNTIES

Likely the broadest of units being considered, defining PAs at the county level is by far the easiest from the standpoint of administration, due to the relatively small number of counties in each state. In New York, there are 62 counties, which means that BEAD applications would be simple to collect, compare, and award.

Allocating grants at the county level, however, comes with serious economic drawbacks. Foremost among these is that density and geography can vary drastically within a county. The all-or-nothing approach of requiring applicants to serve an entire county means that smaller, targeted network expansions (e.g., extending an existing network down a road) would not be allowed. This could disadvantage both large and small ISPs looking to efficiently expand to pockets of nearby unserved locations. Figure 4 illustrates this dynamic by comparing a county-level PA (top-left) with PAs set at the CT (top-right), CBG (bottom-left), and CB (bottom-right) levels.

Figure 4 – Comparison of County (Top Left), CT (Top Right), CBG (Bottom Left), and CB (Bottom Right) PAs in Seneca County, NY



6. RECONCILING THESE DIVERGING PATHS: SMALLER PROJECT AREAS ARE BETTER

As states continue to finalize their BEAD grant proposals, additional novel approaches to PA definition have arisen. Given that numerous methods have already been proposed, there is unlikely to be much consistency between states in this aspect of BEAD grantmaking. This means that ISPs, especially those operating across multiple states who may be best positioned to leverage economies of scale to deploy broadband more economically and efficiently than other applicants, will have to work with a patchwork system of geographic systems. These state-by-state differences, which are quickly becoming a hallmark of the BEAD program's deference to state broadband offices, could discourage some ISPs from applying in multiple states, depriving some areas of the technical, operational, and managerial expertise that these experienced entities could bring to unserved and underserved areas, not to mention the efficiencies they would bring to states' BEAD programs.

NTIA should encourage greater consistency in how states approach the issue of defining PAs. Too much diversity in defining PAs could create a dynamic where some prospective applicants elect not to seek funding in states that take a novel approach to grouping unserved and underserved areas. In addition, some states that set very large PAs might not receive applications for areas with unserved and underserved locations that are spread too diffusely, making it economically infeasible to leverage economies of scale in serving these areas.

A core principle of the BEAD program, as affirmed numerous times by NTIA, is to award the minimum grant funding necessary for a given project so that there are enough resources to bring service to every remaining unserved and underserved location.[18] Allowing states to define PAs that are too big or that include eligible locations that are too spread out would likely result in much higher-than-average costs to serve these areas.

To avoid these inefficient outcomes, NTIA should underscore the importance of maintaining some semblance of consistency across the states and highlight common approaches, like using CBs to define PAs, that could yield more uniformity and efficiencies that will maximize the effectiveness of the State's BEAD funding.

In short, defining PAs is a critical and foundational issue for the efficient administration of BEAD. NTIA's role will be critical to ensuring that states do not unintentionally undermine their grant programs by choosing suboptimal approaches to setting their PAs.

NOTES

[1] *See, e.g., BEAD Notice of Funding Opportunity*, at p. 38, NTIA (May 2022), https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf (BEAD NOFO).

[2] *Draft: Initial Proposal Volume II,* at p. 34, Texas Broadband, Office of the State Comptroller (Nov. 2023), https://broadbandexpanded.com/files/iija_plans/TX%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[3] *Draft: Initial Proposal Volume II,* at p. 82, BroadbandOhio (October 2023), https://broadbandexpanded.com/files/iija_plans/OH%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[4] *Draft: Initial Proposal Volume 2,* at p. 16, Oklahoma Broadband Office (Oct. 2023), https://broadbandexpanded.com/files/iija_plans/OK%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[5] *Draft: Initial Proposal Volume 2,* at p. 10, Michigan High-Speed Internet Office (October 2023), https://broadbandexpanded.com/files/iija_plans/MI%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[6] *Draft: Initial Proposal Volume 2,* at p. 25-26, Connect Illinois (Sept. 2023), https://broadbandexpanded.com/files/iija_plans/IL%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[7] *Draft: Initial Proposal Volume 2,* at p. 18, Kansas Office of Broadband Development, https://broadbandexpanded.com/files/iija_plans/KS%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[8] *Draft: Initial Proposal Volume 2,* at p. 19, Business Oregon, https://broadbandexpanded.com/files/iija_plans/OR%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[9] *Draft: Initial Proposal Volume 2,* at p. 38, ConnectLA, https://broadbandexpanded.com/files/iija_plans/LA%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Final.pdf.

[10] *Draft: Initial Proposal Volume 2,* at p. 17, High Speed NV (Sept. 2023), https://broadbandexpanded.com/files/iija_plans/NV%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[11] *Draft: Initial Proposal Volume 2,* at p. 52, N.Y. ConnectALL Office, https://broadbandexpanded.com/files/iija_plans/NY%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[12] *Draft: Initial Proposal Volume 2*, at p. 14, New Jersey, https://broadbandexpanded.com/files/iija_plans/NJ%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[13] *Draft: Initial Proposal Volume 2*, at p. 22-24, New Mexico, https://broadbandexpanded.com/files/iija_plans/NM%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[14] *Draft: Initial Proposal Volume 2,* at p. 44, West Virginia (October 2023), https://broadbandexpanded.com/files/iija_plans/WV%20-%20BEAD%20Initial%20Proposal%20-%20Volume%202%20Draft.pdf.

[15] Census Bureau, Glossary: Block Group, https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4.

[16] Census Bureau, Tallies – 2020, https://www.census.gov/geographies/reference-files/time-series/geo/tallies.html#tract_bg_block (dividing the total number of U.S. CBs by CBGs).

[17] Census Bureau, Glossary: Census Tract, https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_13.

[18] *See, e.g., BEAD NOFO* at p. 43.