May 5, 2023

The Honorable Alan Davidson
Assistant Secretary of Commerce for Communications and Information and NTIA Administrator
United States Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

RE: PAgCASA Comments on Proposed Model BEAD Challenge Process.

Dear Secretary Davidson:

We appreciate the opportunity to comment on the agency's Proposed Broadband, Equity, Access, and Deployment ("BEAD") Challenge Process Guidance.

PAgCASA (Precision Ag Connectivity & Accuracy Stakeholder Alliance) is a nonprofit organization whose mission is to design, field test, and deploy technical and policy tools needed to ensure equitable broadband deployment and accurate mapping across America to spur rural prosperity and digital equity.

The following comments focus on the need to establish rigorous independent testing criteria and independent certification processes using network monitoring devices and standards to govern the broadband network speed and latency tests.

Network Monitoring Devices Testing and Certification

On page 20 of the draft BEAD Model Challenge Process document, under the "Speed Test Requirements" heading, it notes that speed testing can take four forms. The first form is "a reading of the physical line speed provided by the residential gateway" (i.e., DSL or cable modem, or ONT).

We feel strongly that the most accurate testing method for speed, as well as latency, is a *device-driven* measurement approach on the physical line at the gateway (ethernet-connected to ISP's premium customer's modem). Moreover, we believe that unaffiliated, independent testing and certification using *industry-grade* monitoring devices to measure the speed and latency at the customer's end of fixed broadband network is critical to ensure accurate tests that are trusted by all parties.

We consider an industry-grade device as one that can perform the testing at the speeds required, is able to handle multiple speed testing applications in succession (see below under "Speed and Latency Testing Apps), and poses no risk to the ongoing broadband service to the residence (an essential "lifeline" service) or to the host ISP's network.

Speed and Latency Testing Apps

Via the network monitoring device ethernet-connected to the modem, we recommend running the hybrid Ookla and M-Lab speed and latency testing applications, in addition to whatever speed testing application the host ISP uses for its network testing, for the following reasons:

1. Running all three back-to-back would provide an optimal test data set for analyses and a standardized subset of data (Hybrid M-Lab and Ookla) on which to build a statewide set of usable data.

2. Pre-loading the speed and latency testing apps onto the network monitoring device is strongly advised given it prevents the host ISP from "flagging" the speed test app request (as there will not be a request sent out), which allows ISPs to packet-prioritize the ping test on their network that serves to enhance speed and/or divert the ping test to their closest server. Additionally, pre-loading the speed and latency testing apps eliminates the need for the ISP customer to interrupt their evening or daily routine to manually run the tests (thus eliminating the human variability factor).

3. It is understood by both M-Lab and Ookla that differences in their speed and latency testing data derive largely from the locations of the ping servers each has deployed, or has access to, that are scattered around the country. In many rural areas of the country the differences in locations between these well-respected speed and latency apps is considerable -- leading to a sizable difference in both data sets with a wider variance in the latency data. The reason for including the hybrid app in addition to the ISPs speed and latency app is that the host ISP is likely to leverage its "home court" advantage by selecting their closest network server as the selected ping server for the test. In many rural areas, this would lead to the significant inflation of their networks actual "available service" speed while significantly reducing the latency numbers.

4. There is a need to develop and agree upon a standardized algorithm to apply to the speed and latency test data sets (three or more) that will adjust each set of numbers, taking into account the distances each traveled to their designated ping server and number of POPs (Point of Presence) each encountered on the way. This process will lead to much more accurate speed and latency data sets for each ISP network tested. The NIST guidelines pertaining to latency in the NTIA BEAD NOFO would be a good place to start.

Non-Technical Recommendation Concerning the Network Monitoring Devices

Given the Department of Commerce's "*Build America, Buy America*" mandate, network monitoring devices should also be subject to this criteria. There are several top-shelf, industry-grade network monitoring devices assembled in America and sold by American technology companies, and use of these devices would be advisable related to the BEAD Model Challenge Process and beyond.

Modem Information Should Be Captured as Part of NTIA's Broadband Testing Protocol

The serial and model number information listed on the side of the modem needs to be captured (e.g., in a photo) and included with the other information that is reported as part of the Challenge (e.g., copy of the customer's ISP bill showing level of service, premium ISP customer, address/location of tested dwelling, etc.). There is ample evidence that older/legacy modems that were not replaced/updated when a customer's service was brought up to the premium service level have been known to retard network service speeds and thus, skew the test data. Having the needed information on hand to validate that this identifiable and reoccurring situation is indeed the cause of the subpar speed test data will be very helpful to all concerned.

Conclusion

Ground-truthed speed and latency data via our device-driven methodology serves the goals of the U.S. Congress, the NTIA, state broadband offices, and nonprofit organizations like PAgCASA, which truly want to close the nation's broadband gap. Verified speed and latency data will also provide the accountability needed to ensure that taxpayer dollars are being effectively deployed to accurately identify areas of underbuild, areas of overbuild, and to address inequities as a result of broadband "redlining."

Thank you.

Sincerely,

Garland T. McCoy
Executive Director
Precision Ag Connectivity & Accuracy Stakeholder Alliance (PAgCASA)