

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Establishing the Digital Opportunity)	WC Docket Nos. 19-195 and 11-10
Data Collection; Modernizing the FCC)	
Form 477 Data Program)	
)	

COMMENTS OF PRECISION AG CONNECTIVITY & ACCURACY STAKEHOLDER ALLIANCE

The Precision Ag Connectivity & Accuracy Stakeholder Alliance (“PAgCASA”) submits the following comments in response to the Commission’s *Public Notice*, “Comment Sought on Technical Requirements for the Mobile Challenge, Verification and Crowdsourcing Processes Required Under the Broadband Data Act,” DA 21-853, in WC Docket No. 19-195.

PAgCASA is a not-for-profit education foundation whose mission is to design, field test, and deploy technical and policy tools needed to ensure accurate broadband mapping and deployment across America to help spur smart agriculture, rural prosperity, and digital equity.

BACKGROUND

PAgCASA participated in the FCC WC Docket No. 19-195, “Establishing the Digital Opportunity Data Collection,” and WC Docket No. 11-10, “Modernizing the FCC Form 477 Data Program,” with comments filed September 8, 2020, reply comments filed September 17, 2020, and an ex-parte letter with attached draft one page methodology document entitled “A People Centered Broadband Data & Mapping Campaign: Maps to Bridge the Gaps” filed May 12, 2021.

Our work has been fueled by the thousands of voices coming from citizens across the country who, for over a decade, attended district meetings held by their Representatives and Senators to express frustration and outrage at being left behind in America’s march to ensure robust broadband access to all its citizens. Our hope is that the new FCC Broadband Mapping Methodology will embrace an active, citizen-focused outreach and direct customer support program to ensure that an abundance of data originating from consumers makes its way onto the new FCC Broadband Maps.

PAGCASA's standardized third-party Broadband Network Speed Testing Methodology (detailed later in this document), which has been updated to reflect the mobile challenge, verification, and crowdsourcing process, is sufficiently robust to support data gathering, challenge and verification for both fixed wire and wireless, as well as mobile broadband networks.

In addition, our crowdsourcing methodology will be used to execute a "trust but verify" approach to validating (ground truthing) the FCC's new 4G LTE Coverage Map (which is based on data provided by the four top mobile service providers). ***We see this in-the-field data gathering mission as a win-win for the customer and the FCC.*** By downloading the appropriate app and unlocking their smartphone (by taking out the phone's SIM card) or by using an unlocked smartphone that we will provide, a consumer conducting this test with either of these modified devices will be able to find out where their mobile service ranks among those providing service in their area. This opens the door for direct consumer comparison of services and knowledge regarding who is providing the best service for their area.

TECHNICAL REQUIREMENTS FOR MOBILE CHALLENGE, VERIFICATION, CROWDSOURCING

(Important components: "*user friendly*," "*equity*," and "*best available*" service is benchmark for testing on both fixed and mobile broadband networks; "*clearing house*" for technical and procedural updates and "*best practices*.")

The FCC and Broadband Data Act frequently use the phrase "*user friendly*" in framing their objectives in the design, building, and implementation of a new broadband mapping methodology. We have kept this phrase in mind as we built out our methodology.

We believe the totality of work laid at the feet of third-party, crowdsourced broadband customers is considerable and that an effective education and direct outreach and support suite of programs needs to be in any "technical" toolbox if the FCC's new methodology is to succeed.

We also strongly agree with Acting FCC Chair Rosenworcel, Broadband Data Task Force Chair Jean Kiddoo and many others involved in reforming the FCC Form 477 Data Program who have argued that the new Mapping Methodology should comprise a strong *equity* component. Our methodology is designed by data analysis and targeted outreach campaigns to ensure that resources flow to those areas where the need is the greatest, and with the ability to follow up to ensure fulfillment.

The FCC is looking for "technical requirements" to support **two** distinct ground truthing Mobile Network Broadband Tests.

The first test is designed to capture crowdsourced third-party "ground truthing" data to validate the FCC's new 4G LTE Coverage Broadband Map comprised of data provided by the four top mobile service providers.

The second test is designed to provide a way for the customers of mobile service providers to challenge their service by conducting network speed tests and posting the results and the supporting documentation needed for the challenge, data verification process in accordance with protocols established and modified over time by the FCC. *Both mobile network tests can be conducted by the same third-party participants.*

We believe that **all** broadband network speed tests, regardless of the network infrastructure (fiber/fixed wireless or mobile), should be conducted on the best available network, using the best/premium service/data package. In rural areas you might have only one fixed broadband service provider to choose from for service to your home or business. However, on the mobile side you will often have multiple vendors to choose from as the capital expense of providing mobile service is considerably less than the cost of bringing a dedicated fixed “wire” fiber/and or fixed dedicated point-to-point wireless service to the home or business.

For example, it might be the case that the mobile customer wishing to challenge their service is not on the best service available in that area. So just as you want to speed test only those fixed network broadband customers who have purchased their service provider’s premium package, you will want to ensure you are speed testing the premium mobile service offered in any given area. As such, we will help customers do just that by helping them unlock their phone (see above) or by loaning customers an unlocked phone. The data captured in this first test -- time-stamp geo location, signal strengths and other important data of all licensed mobile service providers’ RF signals in the customer’s area -- will be important ground truthing data for the FCC’s Mobile Carrier Broadband Maps.

Once the customer has documented that they are on the best mobile service in their area, our help line and real-time live chats will assist mobile customers through the process of conducting network speed tests for their service. This includes ensuring they have the right speed testing software loaded on their phone, have disabled their phone’s Wi-Fi, and have reviewed and understand the standardized check list that we will provide them. The check list will spell out various requirements such as: the times of day that a test can be conducted, the minimum time duration of a test, how many times the test should be conducted and the length of time between tests, the preferred locations for taking both stationary and mobile speed tests, what supporting documentation needs to be captured for the challenge, how to capture and post the results, etc.

RAW DATA DOWNLOADED FROM THE FIELD

PAGCASA strongly recommends that the FCC rely on, at least to supplement generic carrier representations, actual real-world data from broadband users regarding coverage, throughput speeds and network availability.

Under PAGCASA’s proposal, raw data coming in from customers will be analyzed using the open-source software HG geospatial indexing system and other open-source/statistical design software tools operating on our platform, or operating at the FCC, and interacting securely with our

raw data to determine if the data meets certain criteria. Examples would include determining whether the stationary, mobile, or both tests were conducted inside the service provider's service area as attested in their filing with the FCC, or if the tests were in an area where additional data has been gathered reaching "the minimum sample size to create a challenge as well as geographic and temporal requirements when conducting the speed tests." (1. Appendix).

While the platform is the best place to analyze the raw data, it is also the best place to act as a "clearing house" to keep current on all the technical speed testing specifications and protocols originating from FCC bureaus like OEA and WTB, (footnote #2). It can also serve as a repository of what works in the field, i.e., "*best practices*."

We also understand the need to ensure our platform is fortified with rich "fabric" relevant data so that we can best target the appropriate outreach to where third-party data from the field is thin or non-existent.

Through our mapping methodology, we are committed to the **equitable** deployment of broadband infrastructure assets. Our goal is to ensure a nationwide broadband data map where no one is left behind, and no one goes unaccounted.

To that end we are looking to partner with whoever wins the FCC's "Fabric" contract. We would use the rich granular layers of data to target areas of need for additional outreach and ensure that over time these areas receive the much-needed broadband access the infrastructure funds are intended to enable.

METHODOLOGY

(Critical components of PAgCASA's proposed "people-centered" data and broadband mapping methodology)

- A resilient, secure, interactive website to publicly post data while protecting individuals' privacy.
- A standardized, end-to-end platform and in-the-field third-Party, crowdsourced, "ground truthing" initiative.
- Built on the language of the Broadband Data Act.
- Using open-source code as the foundation for all aspects of our data capture (speed testing apps), posting and analyzing (open-source Uber Technologies, Inc., H3 geospatial indexing system, etc.) for both fixed wire/wireless and mobile broadband networks and supporting documentation covering components of the Challenge process as it pertains to third-Party data, *insuring data transparency, portability, and interoperability at every layer of code.*
- Heavily focused on providing customer education and support before, during and after the broadband speed tests are conducted and posted along with challenge documentation.
- Check lists of items that participants will need to have ready before they run and document their Internet speed tests (e.g., a smartphone with camera to document testing process, most

recent ISP or Mobile phone bill-redacted, attestation as to reviewing the instructional videos, etc.).

- Instructional video tutorials and all content provided to guide participants (in English and Spanish) through the *standardized* data gathering, documentation, and posting process (e.g., tutorials demonstrating video capture of pre-testing steps, how to de-activate router and mobile phone Wi-Fi, ensure computer/mobile phone is not running a software upgrade/patch, etc., how to connect computer that will run speed test directly to router, or how to unlock your own smartphone.
- Information on where to find free-to-use devices (unlocked phones with pre-installed apps and router-to-computer cable, etc.) they will need to document and run their speed tests (open-source based speed test apps, ones not associated with a company or companies, like the speed test apps offered by FCC or Universities and PUC).
- Skilled volunteers to staff the live interactive web chats and help line.
- Built as a “living” platform for multi-year third Party data gathering, posting and analysis, with new volunteer participants’ data being added alongside updated data from existing participants so that progress can be bench marked and taxpayers ROI can be assured.
- An up-to-date web hub that keeps current with evolving FCC (OEA, WTB) testing and data analysis standards and specifications in the mobile service and fixed network service areas such as geographic threshold, temporal threshold, testing threshold, etc.

NATIONWIDE CROWDSOURCING NETWORK PARTNERS

- Partnerships with well-established and trusted public and private entities in rural and urban regions and the recruitment of in-the-field volunteers and regional organizers.
- Organizations would include (sample list); USDA Ag Cooperative Extension, SHLB (Schools, Health & Libraries Broadband Coalition), Land O’ Lakes American Connection Project Broadband Coalition, State Farm Bureau(s), FFA (Future Farmers of America), 4-H, Urban League, Tribal Broadband, PCI (People Centered Internet), ISOC (Internet Society), Marconi Society, Resource Conservation Districts, State, County, and Local Government organizations.

TARGET GROUPS OF CITIZENS TO PARTICIPATE & OUTREACH PROGRAM TO RECRUIT THEM

- Households and small businesses who have tried to get land-based and mobile Internet access (broadband) but have been told it is not offered in their area via personal outreach, posters with partner organizations, local public service spots on radio/TV, etc.—all highlighting a number to call that will prompt the caller through a series of pre-recorded questions and capture the information needed. We will also have an option to speak to one of our help-line volunteers.
- Households and small businesses who are using dial-up modems as their only fixed “on ramp” to the Internet (we would want them to post pictures of their modem to validate along with zip code to give general location). These customers may or may not have some mobile broadband access.

- “Fixed” Broadband network customers who have the “premium” Internet/Broadband service package offered by their carrier (ISP or Telco) which will be validated by the video/picture of the redacted bill (personal information including Broadband “package” and price held private and secure but able to be tied back to the publicly posted data if need be and with permission). To be effective we will ask these volunteers to conduct speed tests at three specific times during the day (times TBD) and over the course of two non-contiguous days.
- Mobile customers who have independently verified they are using the best mobile service available in the area (by unlocking their own phone or using an unlocked phone pre-loaded with appropriate software which we would provide to conduct a test of all the mobile service available at their location and the signal strengths of each service).

Our “living” broadband data map will be constantly updated to reflect the granular crowdsourced data that will be arriving. The platform and data will be managed on open-source software (KoBoToolbox) with data transparency and portability ensured at every layer of code. We will actively seek out in-kind gifts and awards for our in-the-field organizers and if possible, for all those voluntarily going through the process of documenting a broadband speed test in accordance with our protocol and providing requested supporting documentation.

By following flowchart/steps covered in the website educational tutorials, and providing video documentation and attestations, we will be able to withstand any serious challenges from incumbent service providers.

We would strongly advise the FCC to provide for a robust flow of citizen speed test data, which is gathered correctly and with supporting documentation, so it can withstand service provider challenge. Further, to ensure the needed ground-truthing of the mapping data, we advise the FCC to work with a credible outside non-profit (and non-government) third-Party dedicated to recruiting and supporting consumers in this critically important part of any meaningful broadband mapping initiative.

Respectfully submitted,

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