North Carolina Broadband Infrastructure Office Comments on WC Docket No. 11–10; FCC 17–103, Modernizing the FCC Form 477 Data Program

The State of North Carolina primarily uses Form 477 data to determine where citizens have access and where they do not, which allows the agency to design and implement policies and programs to facilitate access. Additionally, the data are used to find residences and businesses that have access, but do not use internet service. Form 477 data are also used to track the progress of deployment of specific types of technology.

The following comments are based on these primary uses and objectives.

Broadband data user characteristics

From the Broadband Infrastructure Office's (BIO) current experience with FCC Form 477 data, especially in classifying areas with varying levels of broadband coverage, we can categorize users as follows:

Table 1. Types of Broadband Users

User	Coverage Access	Current Customer	Quality[1]	Policy Category
I	Yes	Yes	High	Served
II	Yes	Yes	Median[2]	Served
III	Yes	Yes	Low	Underserved
IV	Yes	No	n.a.	Unserved
V	No	No	n.a.	Unserved

Citizens in the shaded rows are the most likely beneficiaries of BIO's goals and overall mission; therefore, providers' data made public by the FCC could help identify and geographically locate these user segments or areas with higher precision or granularity.

FCC data analysis methods currently used

Currently, the methods used to calculate basic statistical figures and design maps are limited by the existing data provided by the FCC.

- Analysis of current FCC data by census blocks
    - Statewide geographic coverage by Technology using GIS

[1] Maximum Advertised Speed is used as the current parameter of quality, since it is the most consistently provided attribute.

[2] Median is the parameter that characterizes the speed level that most of customers get statewide.

- Statewide geographic coverage by Speed using GIS

Notes on FCC data provided at census blocks scale

According to the FCC, providers are mandated to submit census blocks only where they provide coverage; however, Form 477 data does not reveal the following:

- Areas where providers have customers and have infrastructure available to add more
- Areas where providers have customers and cannot add more

Additionally, providers are not required to declare specific locations served in a census block at the time of data submission. Additionally, the dataset does not reveal where providers are willing to expand services up to or beyond a desired threshold.

Even though population data for 2010 is available from the Census Bureau, the data is outdated. Additionally, using census blocks populations or households regardless of the status of the data can grossly over-estimate the user base; therefore, we do not recommend its use in the future. It would be more useful if providers were to submit the number of users per block or at least per county.

Data Needed

Ideally, FCC data analyzed by census blocks could lead to basic reporting, such as the partial example below:

Table 2: Hypothetical attribute table showing minimum reporting statistics at the county scale

County	Technology	Median Delivered Speed	Maximum Delivered Speed	Minimum Delivered Speed	Households Served %	Households Unserved %	Households Underserved %	Location
Franklin	Fixed Broadband	25	45	10	80	15	5	See Map

In that sense, the data needed to accomplish BIO's objectives must be able to characterize the following users:

- User III: Location of customers with access limited to low speed (low is defined as below a pre-selected threshold, such as 3, 10, or 25 mbps).
- User IV: Location of non-customers with access to coverage, but without service. This information may not be collected by providers or is otherwise excluded from their marketing analysis.
- User V: Location of non-customers without coverage. This information may not be collected by providers or is otherwise excluded from their marketing analysis.

Additional Comments:

Table 3: Comments for FCC on Fixed Broadband

Topic	Comment
Need to differentiate business from residential coverage?	• In our case, yes. We would like to keep collecting this information unless the two data groups do not show significant differences.
Should providers not give data on speed?	• Even though the data BIO has been consuming the most were maximum advertised (and not contractual for consistent lack of completeness), it is important that the dataset contains speed data, otherwise the dataset would be of little use for assessing where broadband services need to be above a desired threshold by user and local government standards. • Providers are furnishing contractual speeds, but not data on completeness; this is of little value for analysis. The field most used by this office is best effort services (or advertised). We would recommend that providers also provide minimum speed, either as best effort or advertised, as long as that data completeness is consistent.
Should providers not give data on collection methodologies?	• Providers should give as much information as possible on collection methodologies in their metadata because different providers could use different methodologies. In this way, BIO could better assess which analytical method(s) to use and determine the value of the data for policy development purposes.
Filing Frequency	• Currently, FCC datasets are released every six months, and the last release has a backlog of one year. • Shortening the frequency of the data releases without addressing the current backlog would negatively affect how states and local governments assess broadband services in their areas. • For precision purposes, it is important to find strategies to reduce the backlog of data release.
Increasing the level of granularity at which the Form 477 data is collected	• Form 477 should continue to use census blocks as minimum area. • Providers should list specific locations or areas within a census block where providers are willing to expand service to more customers or where they are unable to expand service. • Form 477 should require address points (or addresses) data of those locations with internet access. These addresses should be accompanied with geocodes to improve data matching methods.

Collecting data that specifically identifies where new customers can readily obtain service	• Providers need to identify areas or address points with current customers and where new ones could be added for similar services. • Providers need to identify areas or address points with current customers, but where new ones cannot be added. (This area is interesting because marketing could purposely exclude certain neighborhoods or households based on income and/or other variables.) • Providers need to identify areas without customers but where new ones could be added within a standard interval of service upon request.

North Carolina Broadband Infrastructure Office

The Broadband Infrastructure Office, a division of the North Carolina Department of Information Technology, was established in early 2015 as a statewide resource for broadband availability and adoptions initiatives. The mission of BIO is to provide policy recommendations and planning guidance to community and state leaders to foster the expansion of high-speed internet access with the objective of improving global competitiveness, education, public safety, health care, and government efficiency. In keeping with the belief that organized and informed communities will bridge the digital divide, a technical and community assistance team partners with willing communities to provide on-the-ground assistance to implement those policies and plans.