



July 6, 2020

***Ex Parte Letter***

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

**Re: Establishing the Digital Opportunity Data Collection, WC Docket No. 19-195  
Modernizing the FCC Form 477 Data Program – WC Docket No. 11-10**

Dear Ms. Dortch:

On Wednesday, July 1, 2020, the undersigned and Michael Romano with NTCA–The Rural Broadband Association (“NTCA”),<sup>1</sup> together with Larry Thompson and Brian Bell from Vantage Point Solutions, met with the following Federal Communications Commission (“Commission”) staff: Kirk Burgee, Wireline Competition Bureau (“WCB”) Chief of Staff; Steve Rosenberg, Office of Economics and Analytics (“OEA”) Chief Data Officer; Chelsea Fallon, Director of the Rural Broadband Auctions Task Force; and Justin Faulb, WCB. The parties discussed the Draft Second Report and Order and Third Further Notice of Proposed Rulemaking (“*Draft Mapping Order*” or “*Order*”) released on June 25, 2020 in the above-referenced proceedings. NTCA and Vantage Point discussed proposed amendments to the *Draft Mapping Order* intended to ensure that both the granularity and accuracy of broadband coverage maps are improved. Mr. Romano also spoke that same day with Austin Bonner, wireline legal advisor to Commissioner Geoffrey Starks, regarding this subject matter.

As an initial matter, the parties reiterated their desire to assist the Commission in moving beyond broadband maps that have long frustrated efforts to make good policy and sound funding decisions for fixed and mobile services alike. In its advocacy on this issue, NTCA has consistently pushed for common technical standards for each technology as a baseline of reporting to move beyond the many fatal weaknesses in current Form 477 reporting and to give all stakeholders an accurate view of where funds should and should not be made available for the benefit of consumers in need of service.

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<sup>1</sup> NTCA represents approximately 850 independent, community-based telecommunications companies and cooperatives and more than 400 other firms that support or are themselves engaged in the provision of communications services in the most rural portions of America.

**The Draft Mapping Order’s proposals for maximum buffers for reporting wireline broadband service coverage fail to recognize the already-proven, real-world capabilities of fiber as well as the realities of deploying broadband in rural America.**

***A 6,600 maximum buffer in the Draft Mapping Order is inconsistent with how rural networks are engineered and operated in the real world today.***

NTCA and Vantage Point noted that the *Order*’s provision adopting a “maximum distance of 6,600 route feet (or 2,000 route meters) from the aggregation point and a maximum drop distance of 240 feet”<sup>2</sup> is overly broad in applying the same buffer to Hybrid-Fiber Coax (“HFC”), Fiber-to-the Premises (“FTTP”), and Digital Subscriber Line (DSL) technologies alike. Specifically, we explained that a buffer of 6,600 route feet for fiber fails to capture the capabilities of fiber as proven by real-world deployments and as ensconced in long-standing industry standards. We further indicated that precluding reporting of fiber coverage in the absence of “aggregation points” (*i.e.*, splitters or other electronics) within 6,600 feet of each location served would promote inefficient and more expensive deployments – and deter deployments altogether in many rural areas. Indeed, given that in many rural areas *the houses themselves* may be more than 6,600 feet apart, a requirement effectively to assign an aggregation point to each such house would fly in the face of reasonable rural FTTP network engineering.

As background, the most commonly deployed FTTP technology in the United States is Gigabit-Capable Passive Optical Network (“GPON”), and it is standardized in ITU-T G.984.1.<sup>3</sup> The “reach” (or “buffer” as described in the *Order*) in a FTTP network is defined as the distance between the Optical Line Termination (“OLT”), which is often in the central office, and the Optical Network Termination (“ONT”) at the customer premises. Precisely to avoid the inefficiency of field deployments that require more maintenance and thus result in greater cost, many rural FTTP deployments use dedicated fiber (*i.e.*, no field electronics or splitters) between the OLT and ONT; for PON networks using dedicated fiber specifically, the splitters are co-located with the OLT equipment. Put another way as an analogy, those architecting FTTP networks have learned in many ways from the errors of DSL network design (which is heavily dependent upon field electronics) and instead leverage the capabilities of fiber to extend signals much more reliably over much greater distances.

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<sup>2</sup> *Draft Mapping Order*, para 17.

<sup>3</sup> SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS Digital sections and digital line system – Optical line systems for local and access networks, Gigabit-capable passive optical networks. (GPON): General characteristics, ITU-T G.984.1, 03/2008. (<https://www.itu.int/rec/T-REC-G.984.1>).

Indeed, the baseline maximum physical reach (or “buffer”) for FTTP networks in the ITU standards is 20 km.<sup>4</sup> But even this is merely a “baseline.” Today, GPON equipment from companies such as Adtran<sup>5</sup> can and does serve customers at distances of up to 45 km. Similarly, Calix, states in the Frequency Asked Questions on its website that distances up to 40 km are possible with GPON,<sup>6</sup> and additional advancements to extend the range further are on the drawing board. Another popular FTTP standard for Active Ethernet (“AE”) is defined by the IEEE.<sup>7</sup> AE equipment often supports distances of up to 40 km.<sup>8</sup> In other words, both GPON and AE FTTP networks support buffer distances that are nearly 20 times greater than the 6,600 feet suggested in the draft order.

And, to be clear, these vendor specifications are neither mere marketing materials nor novel theoretical applications of new gear just now coming online or anticipated in the next several years. They are proven and already tested in the real world, delivering speeds of up to a Gigabit over the very distances indicated in these materials. For example, the attached figure represents an actual (and typical) rural FTTP design. This is a small rural exchange where each location is served from the central office (the OLT) at the center of the exchange. The north/south and east/west roads on this map are approximately one mile apart. The route miles of fiber to one of the customers in southeast corner of the exchange is approximately 11 miles (approximately 60,000 feet) from the electronics in the central office, with the fiber capable of delivering Gigabit speeds whether right next to or 11 miles away from the central office. If the design were to limit the buffer distances to 6,600 feet per the provisions in the *Draft Mapping Order*, however, then *30 to 40 electronic locations (OLTs)* would have to be deployed in the field to be able to claim those as served (even though they truly are), increasing monumentally both the capital and operating expense associated with the network while ironically reducing the reliability of the network (including more frequent losses of commercial power) due to the greater prevalence of points of failure exposed in the field.

We pointed out that, unless the *Draft Mapping Order* were to make provisions to “grandfather” services already delivered to existing subscribers (many, if not most, of which, again, are architected as described above in rural areas rather than placing network electronics within 6,600 feet of each customer), the adoption of the standard currently stated in the item would likely lead to thousands (and perhaps tens or even hundreds of thousands) of FTTP-served reported locations “coming off the map” – which would lead to the figures that the Commission has been relying upon to tout advancement of broadband needing to be revised downward substantially based upon nothing more than an arbitrary 6,600 foot figure that bears no relationship whatsoever to actual network engineering or the services actually received by customers already at these locations.

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<sup>4</sup> Ibid, Paragraph 9.

<sup>5</sup> The second page of the Adtran GPON spec sheet (<https://portal.adtran.com/web/fileDownload/doc/32117>) shows the equipment can reach up to 45 km when using a 16x split.

<sup>6</sup> <https://community.calix.com/s/question/0D50g00004pX3k7CAC/frequently-asked-questions-about-gpon>.

<sup>7</sup> IEEE 802.3.

<sup>8</sup> <https://portal.adtran.com/web/fileDownload/doc/32404>.

Moreover, in the context of new buildouts, the 6,600 maximum buffer would likely result in many other locations “coming off the map” (or never coming on) simply because of this arbitrary figure. It would be an odd and unfortunate result indeed for numerous locations that *are* connected and *are* capable of being served under industry-standard engineering principles for FTTP networks to “fall off the map” simply because of a new rule adopting a maximum buffer for which there is no citation in the *Order* or support otherwise in the record. Indeed, for new installations occurring after the *Order* takes effect, the adoption of a 6,600 foot maximum buffer would create odd incentives – prompting providers to consider an inefficient and more costly deployment that diverts resources better used to deploy networks to more unserved locations simply to ensure that the services that they *are* delivering are not “left off the map” simply because they did not place electronics in the field within 6,600 feet of every house across deeply rural landscapes.<sup>9</sup>

***There is no need for the Commission to adopt a separate buffer for drops, whether in FTTP, HFC, or DSL networks.***

NTCA and Vantage Point further discussed the provision in the draft order to adopt a maximum buffer of 240 feet for any drop – that is, the connection from the mainline wire running down a street to each house – whether service is delivered by FTTP, HFC, or DSL. As an initial matter, this limitation appears simply not to contemplate the realities of rural topography. In many rural areas, the houses being served are set back from the road and the driveways are more than 240 feet long. If adopted, this drop buffer would appear to preclude *any* wireline provider from claiming to serve a house that has a setback/driveway longer than 240 feet. In some rural areas, this could essentially take every location off the map.

Moreover, we discussed how a drop buffer is unnecessary for several reasons. First, if the Commission adopts maximum buffers for each of FTTP, HFC, and DSL, it need not *also* have a separate buffer for the drop. Instead, it could simply be made clear that the buffer for each of those technologies includes the distance from the aggregation point to the customer premises. For example, and as discussed further below, in a typical rural FTTP deployment, the buffer should be measured as the distance between the optical line termination (“OLT”) aggregation point and the optical network terminal (“ONT”) on the side of the house – which would include both the mainline fiber and the drop fiber. Second, we observed that while the New York program’s drop limit of 150 feet was cited in the *Draft Mapping Order*,<sup>10</sup> our understanding of that provision was that it was *not* an absolute limit on reporting served locations, but merely a limit on how much the New York program would cover in terms of drop costs. Third, to the extent the Commission’s concern is that a drop buffer is necessary because providers may charge special construction or other extraordinary fees for installation if the customer is set back further than 240 feet from the road, we observed that this is already cared for fully under the new law. Specifically, the new law now precludes a provider from claiming a location as served for purposes specifically of Form 477 unless service can be installed within ten business days in an area where the provider has previously not offered service without charges

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<sup>9</sup> It is worth noting again that, in areas where the average density is less than one location per route mile, this buffer would in effect result in each and every location served having its own aggregation point within an FTTP network.

<sup>10</sup> *Draft Mapping Order*, para. 19.

attributable to the extension of the network.<sup>11</sup> Thus, regardless of how long or short a drop may be, there is no need for “belt and suspenders” to preclude such charges by *also* adopting a maximum drop buffer – and certainly not one that fails to capture the nature of rural serving areas and is instead more reflective of an urban or suburban neighborhood.

***Simple and surgical amendments to the Draft Mapping Order can account correctly for the manner in which FTTP is deployed in rural areas while also providing the Commission with the assurance that depictions of service availability reflect actual capabilities to serve all locations within claimed coverage areas.***

Most commenters in the proceeding have opposed *any* one-size-fits-all buffers on the reporting of fixed wireline coverage.<sup>12</sup> Nonetheless, to the extent that the Commission is convinced that buffers are necessary to prevent some kind of “gaming” in the reporting of coverage, those buffers must at least reflect real-world deployments, industry standards, and the realities of operating in rural areas where houses themselves may often be farther apart than the buffer suggested in the *Draft Mapping Order*. To strike such a balance, NTCA recommends the following surgical changes to the wording of paragraph 17 in the *Draft Mapping Order* (and conforming changes elsewhere in the item, such as paragraph 19 and new rule §1.7004):

*17. We adopt the requirement for use of specific maximum buffers around network facilities for wired technologies. Specifically, we adopt—for providers using Hybrid-Fiber Coax (HFC or cable), Fiber to the Premises (FTTP or fiber), and Digital Subscriber Line (DSL) technologies—the use of a maximum distance from the aggregation point. For HFC/cable and DSL, we adopt a maximum distance of 6,600 route feet (or 2,000 route meters) from the aggregation point. For Fiber to the Premises (FTTP or fiber), we adopt a maximum buffer of 12.4 miles (20km) from an OLT aggregation point to the location asserted to be served, provided that the provider must have deployed fiber that is on or within 500 feet of the edge of the location property, except: (a) where the provider specifically indicates in its submission that it is using electronics equipment that, consistent with manufacturer optical specifications, lower split ratios, and general deployment experience in the industry, can reasonably be expected to enable delivery of service at longer distances (which must be specified by the provider), in which case the provider may assume and report such a maximum buffer not to exceed 37.2 miles (60km); or (b) the provider indicates that it has employed a split ratio that reduces network reach, in which case it must assume and report based upon a smaller maximum buffer consistent with manufacturer specifications and general deployment experience in the industry. We direct OEA, in coordination with WCB and OET, to update these values via notice and comment rulemaking in the future as necessary to ensure accuracy and to account for technological and other developments.*

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<sup>11</sup> See 47 U.S.C. § 641(14).

<sup>12</sup> See, e.g., Comments of NCTA–The Internet & Television Association, WC Docket Nos. 19-195 and 11-10 (Sept. 23, 2019), at 6; Reply Comments of ACA Connects, WC Docket Nos. 19-195 and 11-10 (Oct. 7, 2019), at 7; Comments of WTA-Advocates for Rural Broadband, WC Docket Nos. 19-195 and 11-10 (Sept. 23, 2019), at 5; Comments of Verizon, WC Docket Nos. 19-195 and 11-10 (Sept. 23, 2019), at 3.

The language proposed above contemplates typical rural FTTP deployments already in use today, but also includes “guardrails” to account for any concern about coverage claims outpacing the ability to actually provide service. More specifically, in this language NTCA proposes that FTTP deployments utilize a 20km (12.4 mile) “baseline” buffer (or other buffer depending upon the electronics that the provider indicates it has deployed) provided that fiber has been deployed on or within 500 feet of the edge of the location’s property boundary, with the buffer being defined for this purpose as the distance between the aggregation point of an OLT and the location claimed as served. This buffer rightly captures industry standards in terms of distances to be served, while precluding parties from haphazardly “drawing lines out” for 12 to 37 miles from their OLT and claiming to serve all those areas by ensuring that only those locations that are already actually connected with or near to (*i.e.*, 500 feet away from) fiber can be claimed as served.

In other words, determination of the ability to serve should not turn upon a *given location’s close proximity to aggregation point electronics* – FTTP networks have been developed and built precisely to make that distance less relevant. Rather, as long as those aggregation point electronics are within the distances articulated above consistent with industry standards, it is *proximity to fiber* that will help ensure that a “standard business installation” can be achieved and obviate any concerns with respect to “gaming.”

***A waiver remedy would only result in a flood of waivers if the standards are not fixed.***

The *Draft Mapping Order* proposes that providers could “submit a waiver request explaining where and how it provides service to such areas or locations”<sup>13</sup> to potentially account for the circumstances addressed herein. However, this assumes that a maximum buffer of over 6,600 feet is a unique circumstance. Unfortunately, as described above, the reality of how fiber networks are built in rural areas could cause most if not nearly every NTCA member (as well as numerous other similarly situated providers) to need to submit such waiver requests in order to avoid being “left off the map” simply because they utilized an industry-standard method of deploying a FTTP network. Each such waiver would presumably require detailed engineering specifications to be submitted by providers and reviewed by staff, a costly utilization of resources for both parties that would divert resources better spent elsewhere. Fixing the standards upfront to reflect real-world deployments, industry standards, and the realities of operating in rural areas is a far better and more efficient course of action for all involved.

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<sup>13</sup> *Draft Mapping Order*, para 20.

**The Commission should adjust certain standards for fixed wireless service reporting, as the Draft Mapping Order's provisions on these critical factors could lead to overstated claims of coverage.**

During the meeting, we also discussed questions related to cell edge probability, noting that the 75% threshold as set forth in the *Draft Mapping Order* fails to properly account for the true capabilities of fixed wireless broadband technologies in terms of providing reliable service to every would-be subscriber within a given area where coverage is claimed. At a time when the very purpose of this exercise is to develop maps that are more accurate at a granular location-based level, this could lead to broadband coverage maps that in some instances do not provide policymakers with depictions of service availability at any given location and thus continue to frustrate funding and other decisions.

Specifically, NTCA and Vantage Point stated that a 75% probability of achieving the service level speed at the cell edge, while framed as an approach necessary to account for the fact that fixed wireless providers need not grapple with the same freedom of movement by their subscribers as enjoyed by mobile users, nevertheless leaves the new and improved maps at risk of misstated claims of coverage. A 75% percent cell edge probability translates to approximately 91% overall coverage probability for the entire cell – meaning that, in other words, the coverage claim would represent nothing more than a prediction that 91% of the would-be subscribers in that cell will be able to obtain the speed claimed. It would appear that the Commission, in noting the “the stationary nature of fixed wireless customer installations and the ability to manage the base stations and receivers to maximize coverage at fixed locations,” is essentially banking on a fixed wireless provider’s ability to make adjustments after the fact (*i.e.*, after coverage maps are filed) to customer premises equipment or to their own network equipment to actually provide service to every location within the coverage polygon at issue. Yet, if the goal of reform is to depict areas where every-would be subscriber can actually receive service at the claimed speed without material provider guesswork, a higher cell edge probability factor would seem warranted.

We also discussed the proposed 50% cell loading factor for fixed wireless technology proposed in the *Draft Mapping Order*, which appears simply to import the same standard set forth in the Broadband Data Act for mobile wireless. We discussed what it is intended to be captured by this loading factor and the differences in how fixed and mobile connections are used by consumers. NTCA indicated that it would review the proposal further and may provide further input based upon that review.

Marlene H. Dortch

July 6, 2020

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Thank you for your attention to this correspondence. Pursuant to Section 1.1206 of the Commission's rules, a copy of this letter is being filed via ECFS.



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