



4417 13th Street #317
Saint Cloud, FL 34769
Ph. (260) 622-5776
In U.S. (866) 317-2851

November 12, 2019

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: ***Establishing the Digital Opportunity Data Collection***
WC Docket No. 19-295
Modernizing the FCC Form 477 Data Program
WC Docket No. 11-10

Notice of Ex Parte Communication

Dear Ms. Dortch:

On November 7, 2019, on behalf of the Wireless Internet Service Providers Association (“WISPA”), Stephen Coran, counsel to WISPA, Fred Goldstein, Technical Consultant to WISPA (by telephone) and the undersigned met with the following Commission staff: (1) Chelsea Fallon, Steven Rosenberg and Kenneth Lynch of the Office of Economics and Analytics, (2) Erin Boone and Thuy Tran of the Wireless Telecommunications Bureau, and (3) Michael Ray of the Wireline Competition Bureau. The purpose of the meeting was to discuss WISPA’s “safe harbor” proposal for determining fixed wireless polygons that would be submitted into the portal that is being implemented by the Commission and USAC pursuant to the *Report and Order* in the above-referenced proceedings.¹

The WISPA representatives explained that WISPA submitted its proposal in an October 22, 2018 ex parte letter in response to Commission staff request for further guidance.² We added that the “safe harbor” approach evolved based on significant input from WISPA’s leadership and technical consultant, and that it is intended to balance the desires of the Commission to achieve greater accuracy and granularity in reporting of fixed broadband service without significantly increasing costs and burdens for WISPA’s smaller operator members. We reiterated that the technical parameters comprising the “safe harbors” for each band would create a propagation map that depicted a “reasonable estimation” of coverage.³ Mr. Goldstein explained that the “safe harbors” would be most applicable in rural areas with low noise that thus would be unlikely to experience harmful interference in unlicensed spectrum bands. Mr. Goldstein added that the resulting signal strength is considerably stronger than typical manufacturers’ specifications for

¹ *Establishing the Digital Opportunity Data Collection; Modernizing the FCC Form 477 Data Program, Report and Order and Second Further Notice of Proposed Rulemaking*, WC Docket Nos. 19-195 and 11-10, FCC 19-79 (rel. Aug. 6, 2019) (“*Report and Order*” and “*2nd FNPRM*”).

² Letter from S. Jenell Trigg, Counsel to WISPA, to Marlene H. Dortch, WC Docket Nos. 11-10 and 10-90 (filed Oct. 22, 2018). The “safe harbors” proposed by WISPA in the ex parte letter are attached hereto.

³ *Id.* at Attachment, p.2.



Letter to Marlene H. Dortch
Page 2 of 3

the RSSI levels required to achieve 25 Mbps or higher download speeds. Accordingly, the purpose of the “safe harbors” is to generate coverage maps that reflect where it is highly likely, but not certain, that service could be delivered within a 10-day period without the commitment of extraordinary resources.

The WISPA representatives noted that the “safe harbor” proposal was developed prior to the broadband serviceable-location fabric and the Commission’s proposal in the 2nd *FNPRM* to allow public review and challenge of polygons submitted into the portal. We made clear that adopting “safe harbors” would not preclude whatever public process the Commission may adopt, and that the “safe harbor” was intended for the Commission’s determination of basic compliance with data reporting by broadband providers. We also made clear that providers could use other propagation methodologies so long as those alternatives were adequately explained. For instance, local knowledge of a particular area might show that a “safe harbor” either overstated or understated the areas where broadband service is available.

We also discussed software programs that are used for propagation modeling. While the mobile carriers are most likely to use commercial programs such as EDX and Forsk Atoll, the cost to acquire these programs are beyond the budget of most WISPs. Two other programs widely used by fixed wireless providers are RadioMobile, a desktop program, and TowerCoverage.com, a web service. Both use the same propagation engine. Mr. Goldstein explained that the model is based on the Longley-Rice Irregular Terrain Model with clutter enhancements. The model is then adjusted for local parameters, which can take into account variables such as tree height and typical noise level. TowerCoverage can then produce shapefiles of expected coverage areas and generate coverage area lists for the current Form 477.

Mr. Goldstein also described how RSSI relates to speed (data rates), that higher signal strength and signal to noise ratios do generally support higher speeds. Thus, the RSSIs proposed in the safe harbors are a technology-independent metric that can be interpreted, in context of local noise conditions and channel width, as a means to forecast available speed. RSRP, the other commonly used signal strength metric, is specific to the LTE air interface and can be equated to RSSI based upon the channel width. Most WISP systems are not based on LTE.

We also indicated how crowdsourced data would not work for fixed coverage the same as it does for mobile coverage. Fixed services are not visible on customers’ mobile devices; the service provider retains ownership of the directional CPE and coverage is only verified when the service provider comes to the location. Crowdsourcing would only identify the locations of customers who did or did not get service when requested and within the depicted service area. We indicated that propagation forecasting is necessarily imprecise and that the “safe harbors” are only a starting point for initial maps, and that WISPA members likely would be willing to correct them if errors were found.



Letter to Marlene H. Dortch
Page 3 of 3

The WISPA representatives indicated that they would continue to consider improvements to its “safe harbor” approach and engage with other stakeholders on how to implement a polygon-based approach for fixed wireless broadband availability reporting.

Pursuant to Section 1.1206 of the Commission’s Rules, this letter is being filed in ECFS in above-referenced dockets. Please contact the undersigned with any questions.

Respectfully submitted,

/s/ Louis Peraertz

Louis Peraertz, Vice President of Policy

cc: Chelsea Fallon
Steven Rosenberg
Kenneth Lynch
Erin Boone
Thuy Tran
Michael Ray

FCC Form 477 Propagation Methodology for Fixed Wireless Providers

It is commonly understood that fixed wireless broadband providers do not and should not use the same propagation parameters or models used by the cellular industry. WISPA proposes a two-pronged approach to measuring coverage for the purposes of submitting FCC Form 477 deployment data:

- 1) Typical industry parameters that will serve as a “safe harbor” for the good faith creation of propagation maps based on the height of the access point and customer antenna, signal strength, and the computed coverage assuming a given antenna gain.
- 2) Where the “safe harbor” parameters would not provide accurate coverage data, an alternative calculation would be used. The name of the propagation model or modeling tools used, and an explanation of the methodology appropriate for the frequency band utilized to provide coverage would accompany the submission of FCC Form 477.

I. BACKGROUND

Here is a brief overview of the pertinent differences between cellular/mobile and fixed wireless technologies:

- Cellular/mobile modeling metrics are more standardized across the industry because of the inherent nature of cellular/mobile:
 - Universal use of fewer spectrum bands
 - Equipment is interchangeable between carriers
 - Fewer carriers (compared to 2,000 plus fixed wireless operators)
 - Varying factors that could cause interference (e.g., clutter, terrain, location (indoor or outdoor user location), weather, congestion, type of connected device and other users)
- Fixed wireless providers have much more variability due to the inherent nature of this technology:
 - Widely varying spectrum bands (licensed, unlicensed, and shared)
 - Wide variety of equipment and technology (e.g., WiFi, proprietary, LTE, WiMax)
 - Significant variation in SNR and interference (e.g., clutter, terrain, trees, buildings, congestion, other users)

II. SUGGESTED SAFE HARBOR PARAMETERS

WISPA recommends the following “safe harbor” parameters to set a reasonable estimation of the coverage area for FCC Form 477 Reporting by the Fixed Wireless Industry. Coverage metrics for the fixed wireless industry will vary based on the spectrum band given different types of antennas, power levels, propagation characteristics and potential interference allowed for each. Fixed wireless providers can factor in customer antenna gain and height, and signal strength based on the parameters for each spectrum band. WISPA recommends that the following parameters be adopted for the good faith creation of propagation maps:

5 GHz

- Customer antenna up to 10 meters above ground; or higher or lower antenna heights as needed to reach the customer and as explained by the provider
- Signal strength as low as -75 dBm
- Coverage computed assuming up to 25 dB customer antenna gain, or as allowed by the Commission

3550 -3700 MHz (CBRS)

- Customer antenna up to 10 meters above ground; or higher or lower antenna heights as needed to reach the customer and as explained by the provider
- Receiver signal strength as low as -77 dBm (uncertain because of new band)
- Coverage computed assuming up to 17 dB customer antenna gain, or as allowed by the Commission

2.4 GHz

- Customer antenna up to 10 meters above ground; or higher or lower antenna heights as needed to reach the customer and as explained by the provider
- Signal strength as low as -77 dBm
- Coverage computed assuming up to 16 dB customer antenna gain, or as allowed by the Commission

900 MHz

- Customer antenna up to 10 meters above; or higher or lower antenna heights as needed to reach the customer and as explained by the provider
- Signal strength as low as -72 dBm
- Coverage computed assuming up to 11 dB customer antenna gain, or as allowed by the Commission

600 MHz (TV White Spaces)

- Customer antenna up to 10 meters above ground; or higher or lower antenna heights as needed to reach the customer and as explained by the provider
- Signal strength as low as -74 dBm
- Coverage computed assuming up to 8 dB customer antenna gain, or as allowed by the Commission

Suggested Models to Use:

Overall, the specific model used should be the provider's choice; providers must have flexibility given differences in terrain, as well as software and/or third party modeling services that have already been acquired or are under contract. Providers will need to factor "local parameters" used by a propagation model (e.g., height of trees, buildings). The only requirement is that the model used must be reasonably accurate at the time of filing.

As an example, an inexpensive modeling tool named "Radio Mobile," written by Roger Coudé, is widely used in the fixed wireless industry for the purpose of RF planning. The RF model used by Radio Mobile is largely based on the ITM standard with enhancements for clutter data. At least one commercial vendor (i.e., TowerCoverage.com) uses the same model to generate coverage maps for fixed wireless providers and to generate FCC Form 477 coverage data. WISPA recommends that this model be accepted as a safe harbor model for FCC Form 477 filing purposes.

III. ALTERNATIVE MODELS USING DIFFERENT METRICS & PARAMETERS

If a provider uses a different propagation model having metrics other than the "safe harbor" parameters stated above or uses different spectrum to provide service than the five (5) bands stated above, then WISPA proposes that the provider should submit with its FCC Form 477 filing to the FCC the name of the propagation model or modeling tool, and an explanation of the methodology appropriate for the frequency band utilized to provide coverage. In addition, a provider may submit additional data to the Commission showing the impact that local conditions or interference have on the "safe harbor" parameters stated above.

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