

Attachment B: Compliance with 47 C.F.R. § 25.136(a)(4)

Section 25.136 of the Commission’s rules defines conditions that, if met, permit an earth station licensee to operate in accordance with the terms of its authorization without providing interference protection to Upper Microwave Flexible Use Service (“UMFUS”) stations in the 27.5-28.35 GHz band.¹ The International Bureau has provided guidance to applicants on how to show compliance with the rule’s specifications.² The following analysis demonstrates that the Window Rock Earth Station meets all the requirements of Section 25.136(a)(4).

§ 25.136(a)(4)(i)

The Window Rock Earth Station will be located just outside of the Navajo Nation Division of Community Development building in Window Rock, Apache County, Arizona. This site complies with Section 25.136(a)(4)(i), which states that an earth station can avoid the obligation to provide interference protection to UMFUS licensees only if the county where it is located contains no more than two other earth stations that are exempt from UMFUS protection requirements under Section 25.136(a). MCI has searched the International Bureau’s IBFS database and determined that there are currently no earth stations in Apache County licensed to operate in the 27.5-28.35 GHz band.

§ 25.136(a)(4)(ii)

Consistent with the Commission’s Rules and the Siting Guidance Notice, MCI has calculated the area within which the aggregate power flux density (“PFD”) for MCI’s proposed antenna at the site is equal to or exceeds $-77.6 \text{ dBm/m}^2/\text{MHz}$. According to the 2010 census, Apache County has a population of 71,517.³ As a result, the population within this PFD contour must be less than 450 to meet the relevant condition established in Section 25.136(a)(4)(ii) of the Commission’s rules.⁴ MCI has determined that with shielding the contour satisfies that condition, as the total population affected is 376.

The PFD contour also includes part of McKinley County, New Mexico. The 2010 census indicates that McKinley County has a population of 71,492.⁵ MCI has determined that with

¹ See 47 C.F.R. § 25.136(a)(4).

² International Bureau Issues Guidance on Siting Methodologies for Earth Stations Seeking to Operate in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz, 47.2-48.2 GHz, and 50.4-51.4 GHz Frequency Bands to Demonstrate Compliance with Section 25.136, IB Docket No. 17-172, Report No. SPB-281, DA 20-631 (rel. June 16, 2020) (the “Siting Guidance Notice”).

³ See QuickFacts Apache County, Arizona, United States Census Bureau, available at: <https://www.census.gov/quickfacts/apachecountyarizona>.

⁴ 25.136(a)(4)(ii), Table 1.

⁵ See QuickFacts McKinley County, New Mexico, United States Census Bureau, available at: <https://www.census.gov/quickfacts/fact/table/mckinleycountynewmexico,apachecountyarizona/PST045219>.

shielding the total population affected is 6, satisfying the conditions of Section 25.136(a)(4)(ii).⁶ The earth station parameters used to calculate the aggregate PFD contour are shown in the following table.

Parameter	Earth Station
Latitude	35° 40' 29.60" N.L.
Longitude	109° 3' 26.61" W.L.
Antenna Size	2.4 meters
EIRP Density	23.92 dBW/4 kHz
Antenna Pattern	Measured gain pattern
Min. Elev. Angle	10 degrees

In this analysis, MCI has assumed the ITU-R P.452 propagation model and used 1 arc second resolution USGS Digital Terrain Elevation Data (“DTED”). Moreover, MCI conducted a clutter analysis considering obstacles surrounding the site. The analysis takes into account obstruction that exists adjacent to the western side of the antenna. The obstruction consists of a row of shipping containers stacked on top of each other, creating an obstacle that is 3.9 meters in height. The following picture shows, highlighted in yellow, the containers on top of which same-size containers will be stacked.



Figure 1: Area where containers will be stacked

⁶ 25.136(a)(4)(ii), Table 1.



Figure 2: Picture of obstacles surrounding the antenna that were considered in the clutter analysis

The analysis considers the full range of antenna pointing angles necessary to communicate with the O3b equatorial satellites.

MCI developed the PFD contour for this site using the earth station parameters identified above. The resulting contour is shown in blue on the map in Figure 3 on the following page. Figure 4 is a zoom of the PFD contour in the immediate surroundings of the Division of Community Development building. In addition, MCI is attaching to this application the contour in KML file format (as shown in Figure 3 below), as suggested by the Siting Guidance Notice. The KML file shows the PFD contour and identifies the affected census blocks with their respective Block IDs. Moreover, a line delimiting the border between the two counties was added.

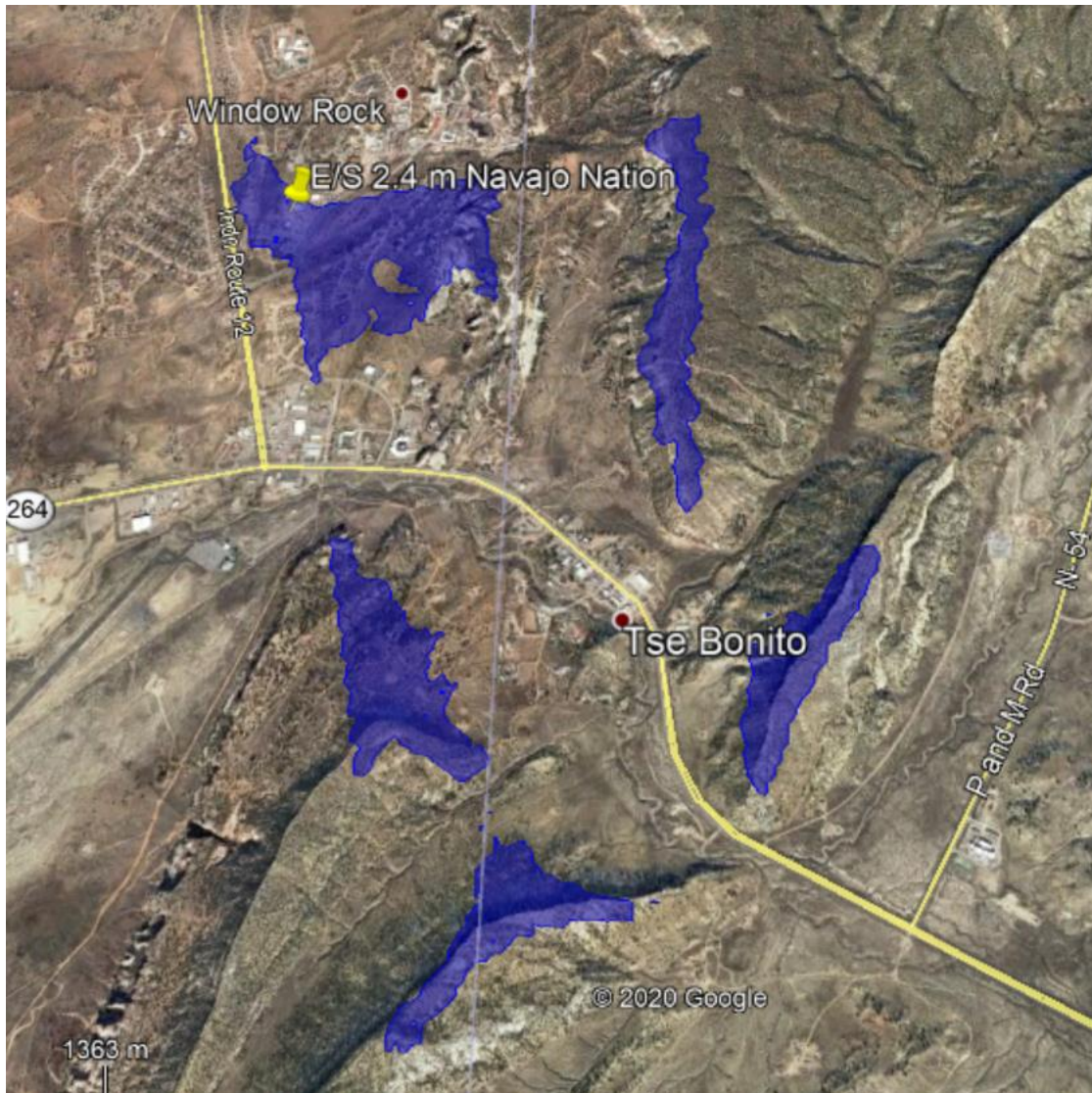


Figure 3: PFD Contour full view

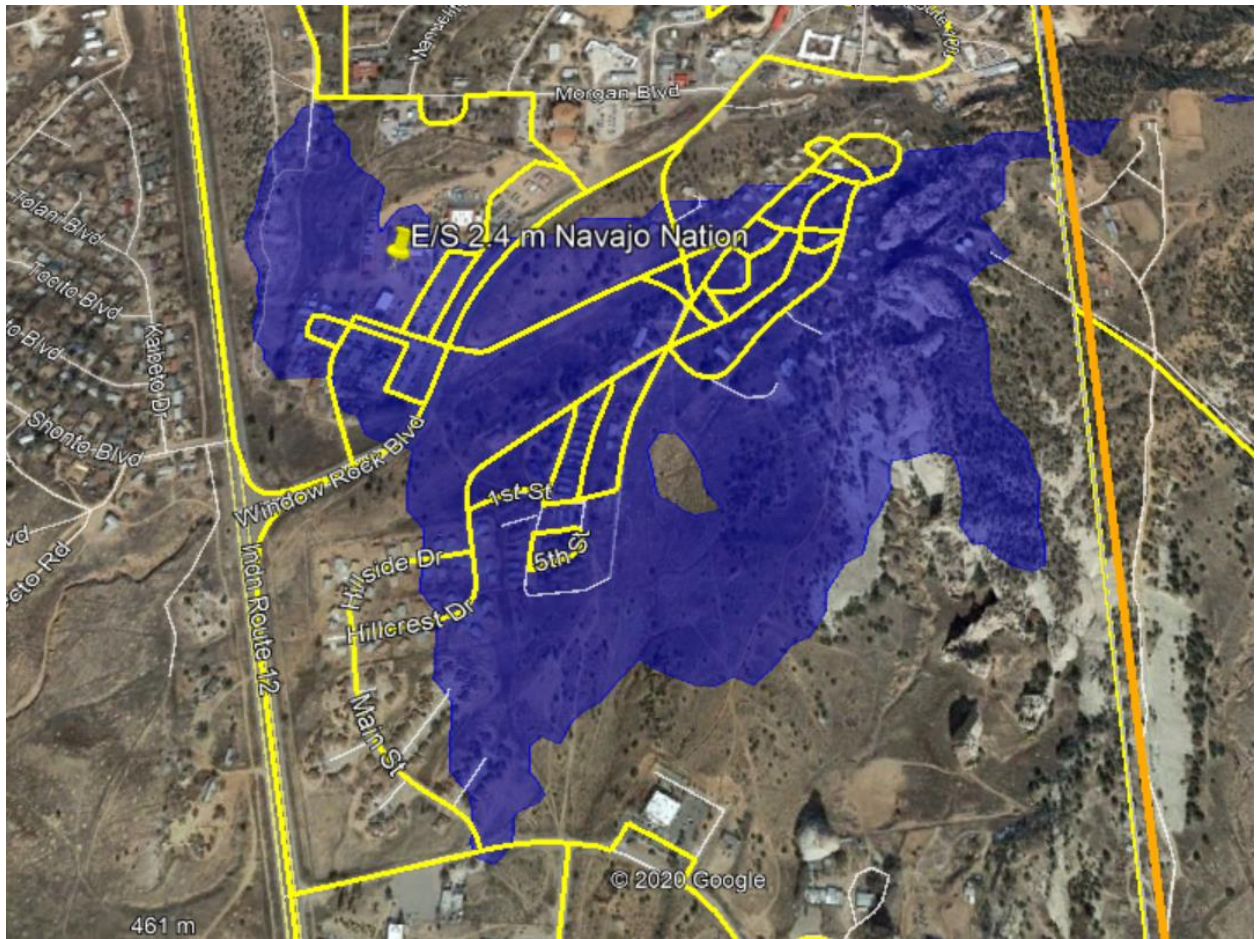


Figure 4: Zoom on Navajo Nation area PFD contour and census blocks

The population data for each census block is from the 2010 U.S. census data. The actual area method was used to assess how many people in a given census block are within the PFD contour. By these calculations, MCI determined that the PFD contour of the Window Rock Earth Station affects 376 people in Apache County, Arizona, and 6 people in McKinley County, New Mexico. These values comply with the population limits in Section 25.136(a)(4)(ii).

§ 25.136(a)(4)(iii)

The Window Rock Earth Station will conform to the limitations in Section 25.136(a)(4)(iii). MCI has performed a search on the FHWA HEPGIS portal⁷ and has confirmed that roads that intersect the Window Rock Earth Station's PFD contour are not designated as Other Freeways and Expressways, or Other Principal Arterials. Additionally, there are no major event venues, passenger railroads and cruise ship ports within the contour. As a result, the Earth station satisfies the requirements of Section 25.136(a)(4)(iii).

§ 25.136(a)(4)(iv)

Finally, MCI has complied with Section 25.136(a)(4)(iv) for the Window Rock Earth Station. That rule specifies that the earth station applicant must successfully complete coordination within its relevant PFD contour with respect to any "existing facilities constructed and in operation by the UMFUS licensee."⁸ Comsearch has submitted a frequency coordination notice on behalf of MCI to all existing terrestrial licensees within the coordination contours of the Window Rock Earth Station. Once the final report is issued, MCI will file a permanent earth station license application with the Comsearch report attached as an exhibit. The Commission's Universal Licensing System shows that Cellco Partnership ("Verizon") is the UMFUS license holder for Window Rock, AZ in the 27.6-28.35 GHz frequency range. As shown in Attachment C, Verizon consents to MCI's use of these frequencies to provide this service.

⁷ See U.S. Department of Transportation, Federal Highway Administration, National Highway System map. Available at: <https://hepgis.fhwa.dot.gov/fhwagis/>. MCI also consulted relevant state sources for Arizona and New Mexico.

⁸ 47 C.F.R. § 25.136(a)(4)(iv).