Broadband Data Collection

Specifications for Data Downloads from the National Broadband Map

March 18, 2025

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Change Log

Revision	Date	Comments
1.0	2022-11-18	Initial release.
1.1	2022-11-21	Updates the language in the Overview (Section 1).
1.2	2023-02-15	Updates to the Summary Data specifications (Section 3.1.3) to reflect new columns and structure of Broadband Summary by Geography file; addition of Licensed-by-Rule Fixed Wireless technology; general cleanup of typos and formatting improvements.
1.3	2023-03-28	Updated the description of the h3_res8_id field in sections 3.1.1 and 3.2.1.
2.0	2023-07-05	Added Section 4 on challenge summary data files.
2.1	2023-10-02	Added Section 4.3 on Mobile Challenge Data.
2.2	2023-11-03	Updated file naming conventions to include both the data vintage and the data revision date.
2.3	2024-03-11	Corrected text in Section 2 to reflect the naming conventions used for file names; updated Section 3.1.3 to add the Provider List table; updated Section 3.1.2.1 to include information about how the hexagon overlay is performed; updated the Description for geography_type field in Section 3.1.3.2 table on Broadband Summary by Geography Type to add “National”; corrected Description for location_id field in Section 4.1.1 table on In-Progress Fabric Challenges; updated table in Section 4.1.3 to reflect the current Fabric challenge resolution codes.
2.4	2024-06-28	Updated to reflect restructuring of Broadband Summary by Geography Type, which is now broken into multiple tables for fixed and mobile, as specified in Sections 3.1.3.5 and 3.1.3.6.
2.4.1	2025-02-11	Fixed typos in speed_1000_100 fields in Section 3.1.3.5.1 and 3.1.3.5.2.
2.4.2	2025-03-18	Specification added for Provider-specific Mobile Broadband Raw Coverage Maps

1 Overview

This document outlines the discrete types of data or files that are outputted by and available for user download from the FCC's National Broadband Map at http://broadbandmap.fcc.gov. The document details the formatting and field-specific information associated with each data file. For more information on the Broadband Data Collection, including the other data specification documents, visit www.fcc.gov/BroadbandData.

2 File Naming Conventions, Abbreviations, and Definitions

The names of the files available for download from the National Broadband Map use file naming conventions with certain abbreviations and references described in the table below.

Field	Description / Notes
State FIPS	2-digit FIPS code for the selected state / territory from the current U.S. Census Bureau data (leading zero included).
Provider ID	6-digit unique identifier for the selected provider. The Provider ID table is available at https://us-fcc.app.box.com/v/bdcprovideridtable.
Technology	Name identifying the selected fixed or mobile technology. *- Value is one of the following:* • *copper* • *cable* • *fiber* • *gso_satellite* • *ngso_satellite* • *unlicensed_tfw* • *licensed_tfw* • *lbr_tfw* • *other* • *mobile_voice* • *3g* • *4g* • *5g*
Data As-of Date	Availability data vintage in Month letter (J or D for June or December respectively) and 2 digit year (i.e. J23).
Revision Date	Data revision date in two-digit day, abbreviated month, and year (e.g., 23Jun2023).

For example, one of the files uses the following for its filename:

- *bdc_{State FIPS}_{Technology}_fixed_broadband_{Data As-of Date}_{Revision Date}.zip*

Therefore, in this example, the file with data on locations served with Fiber to the Premises in Virginia as of December 31, 2022, with a revision date of July 23, 2023, would be named: bdc_51_fiber_fixed_broadband_D22_23_Jul2023.zip.

In addition, certain files available for download include data on the H3 hexagonal cell associated with a location point or coverage area. H3 is an open-source geospatial indexing system based on hierarchical/nested hexagons at 16 different resolutions or areas. For more information, about the H3 Geospatial Indexing system, see https://h3geo.org.

3 Availability Data

The public can download various files on availability data, described in this section, from the Data Download page of the National Broadband Map.

3.1 Data by State

On the By State tab of the National Broadband Map Data Download page, users can select the Availability Data As Of date (vintage) and the state for which they wish to download availability data. Users can then download various datasets for the selected state, including data on fixed broadband and mobile broadband availability for multiple providers, as well as three summary tables. Users can also download certain availability data summary files from this tab.

Data Name	Description / Notes
Fixed Broadband Availability Data	A list of locations served by a selected technology, along with the data submitted by each provider that reports service availability at the location.
Mobile Availability Data by Technology	For the selected technology (3G, 4G, or 5G), mobile coverage maps - based on H3 polygons - indicating the extent of mobile broadband service aggregated across all mobile service providers.
Provider Summary by Geography Type	Broadband availability coverage percentages for various geography types by provider (for both fixed and mobile broadband).
Provider Summary – Fixed Broadband	The total number of business/residential locations and units served for each provider by technology.
Provider Summary – Mobile Broadband	The total stationary and in-vehicle mobile coverage (in sq. km) for each provider by technology.
Broadband Summary by Geography Type	Broadband availability coverage percentages for various geography types across all providers (for both fixed and mobile broadband).

3.1.1 Fixed Broadband Availability Data

Each file contains records of the locations for which any service provider reported fixed broadband availability for the selected as-of date, state, and technology. The Location IDs match those in the Broadband Serviceable Location Fabric. The file includes, for each location, the service availability data reported by the provider, as well as the census block and H3 resolution-8 hexagon within which the location falls. For information on how filers report fixed broadband availability data, see the Data Specifications for the Biannual Submissions of BDC Subscription, Availability, and Supporting Data at https://us-fcc.box.com/v/bdc-availability-spec.

The files are available for download in Comma Separated Value (CSV) format.

Files are available by state, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_{Technology}_fixed_broadband_{Data As-of Date}_{Revision Date}.zip*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the fixed service provider.
brand_name	String	Acme Telecom	Name of the entity or service advertised or offered to consumers.
location_id	String	1357135307	Unique identifier for the location, as used in the Broadband Serviceable Location Fabric.
technology	Integer	50	Code for the technology used for the deployed service. *- Value is one of the following codes:* *10 – Copper Wire* *40 – Coaxial Cable / HFC* *50 – Optical Carrier / Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*
max_advertised_download_speed	Integer	1000	Maximum advertised download speed offered at the location in Mbps.
max_advertised_upload_speed	Integer	1000	Maximum advertised upload speed associated with the maximum advertised download speed offered at the location in Mbps.
low_latency	Boolean Integer	1	Boolean integer flag indicating whether or not the offered service is low latency, defined as having round-trip latency of less than or equal to 100 ms based on the 95th percentile of measurements. *- Value is one of the following codes:* *0 – False* *1 – True*
business_residential_code	Enumerated String {1}	B	Enumerated character identifying whether the service at the location is offered only to business customers, only to residential customers, or to both business and residential customers. *- Value is one of the following codes:* *B – Business-only location* *R – Residential-only location* *X – Business and Residential location*

Field	Data Type	Example	Description / Notes
state_usps	Enumerated String {2}	DC	2-character USPS abbreviation for the state/territory in which the Broadband Serviceable Location is located. - *Value is a valid state USPS abbreviation from the latest U.S. Census Bureau data.*
block_geoid	String {15}	110010106033002	15-digit U.S. Census Bureau FIPS code for the census block in which the Broadband Serviceable Location is located. - *Value is a valid census block from the latest U.S. Census Bureau decennial data.*
h3_res8_id	String {15}	882aa8458dfffff	15-character hexadecimal index for the parent H3 resolution-8 hexagonal cell of the resolution9 hexagonal cell in which the Broadband Serviceable Location falls. Because resolution-9 cells are not coextensive with their resolution-8 parents, a location may fall outside the parent resolution-8 cell.

3.1.2 Mobile Availability Data by Technology

3.1.2.1 Aggregated Mobile Broadband H3 Coverage Maps

These files contain GIS data with polygon geometries and associated data attributes in one of two GIS data formats (ESRI Shapefile or GeoPackage) representing the hexagonal cells at resolution 9 (in the H3 Geospatial Indexing System) where any service provider reported mobile broadband availability. The H3 hexagonal cell identified by the BDC system is determined by taking the overlap of the centroid of the resolution 9 hexagon and the provider's raw coverage data polygons.

Files are made available by state, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_{Technology}_mobile_broadband_h3_{Data As-of Date}_{Revision Date}.zip*

Specifications for the data attributes for these GIS data files are provided in the table below:

Field	Data Type	Example	Description / Notes
technology	Integer	500	Code for the technology used for the deployed service. - *Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*

Field	Data Type	Example	Description / Notes
mindown	Decimal (3,2)	7.0	Minimum download speed for modeled coverage in Mbps. *- Value is 0.2 when technology value is 300 (i.e., 3G), is 5.0 when technology value is 400 (i.e., 4G LTE), and is either 7.0 or 35.0 when technology value is 500 (i.e., 5G-NR).*
minup	Decimal (3,2)	1.0	Minimum upload speed for modeled coverage in Mbps. *- Value is 0.05 when technology value is 300 (i.e., 3G), is 1.0 when technology value is 400 (i.e., 4G LTE), and is either 1.0 or 3.0 when technology value is 500 (i.e., 5G-NR).*
environmnt	Enumerated Integer	1	Integer code indicating whether the area is modeled to have coverage when the user equipment is in an outdoor stationary environment only or in both in-vehicle mobile and outdoor stationary environments. *- Value is one of the following codes:* *0 – Outdoor stationary only* *1 – In-vehicle mobile and outdoor stationary*
h3_res9_id	String {15}	892aa8458c7ffff	15-character hexadecimal index for the H3 resolution 9 hexagonal cell for which coverage is reported.

3.1.3 Summary Data

3.1.3.1 Provider List

This file contains summary information about the providers that fixed and mobile broadband data submitted across all biannual submissions in Comma Separated Value (CSV) format.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_provider_list_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the fixed service provider.
holding_company	String	Acme Broadband LLC	Name of the holding company for the fixed service provider.

3.1.3.2 Provider Summary by Geography Type

This file contains summary information about the fixed and mobile broadband data submitted by a provider for a geography type in Comma Separated Value (CSV) format.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_provider_summary_by_geography_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
geography_type	String	State	Type of geography across which broadband data are summarized. *- Value is one of the following:* ▪ *State* ▪ *County* ▪ *Congressional District* ▪ *Census Place* ▪ *Tribal* ▪ *CBSA (MSA)*
geography_id	String	11	Unique geographic identifier for the identified geography.
geography_desc	String	District of Columbia	Short description of the identified geography.
geography_desc_full	String	District of Columbia	Full description of the identified geography.
data_type	String	Fixed Broadband	Type of data summarized in the record. *- Value is one of the following:* ▪ *Fixed Broadband* ▪ *Mobile Broadband*
provider_id	Integer	999100	Unique identifier for the service provider.
res_st_pct	Decimal (5,4)	0.9095	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report residential fixed broadband service (for fixed broadband) or percentage of area within the geography for which providers report mobile broadband service in an outdoor stationary environment (for mobile broadband).

Field	Data Type	Example	Description / Notes
bus_iv_pct	Decimal (5,4)	0.8625	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report business fixed broadband service (for fixed broadband) or percentage of area within the geography for which providers report mobile broadband service in an in-vehicle mobile environment (for mobile broadband).

3.1.3.3 Provider Summary - Fixed Broadband

This file contains summary information about the fixed broadband data submitted in a biannual submission in Comma Separated Value (CSV) format.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_fixed_broadband_provider_summary_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
provider_id	Integer	999100	Unique identifier for the fixed service provider.
holding_company	String	Acme Broadband LLC	Name of the holding company for the fixed service provider.
technology_code	Integer	50	Code for the technology used for the deployed service. *- Value is one of the following codes:* *10 – Copper* *40 – Cable* *50 – Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*

Field	Data Type	Example	Description / Notes
technology_code_desc	String	Fiber to the Premises	Name of the technology used for the deployed service. *- Value is one of the following:* ▪ *Copper* ▪ *Cable* ▪ *Fiber to the Premises* ▪ *Geostationary Satellite* ▪ *Non-geostationary Satellite* ▪ *Unlicensed Fixed Wireless* ▪ *Licensed Fixed Wireless* ▪ *Licensed-by-Rule Fixed Wireless* ▪ *Other*
location_count_res	Integer	11360	Total count of broadband serviceable locations for which the provider reports residential fixed broadband service for the identified technology.
unit_count_res	Integer	12972	Total count of units for broadband serviceable locations for which the provider reports residential fixed broadband service for the identified technology.
location_count_bus	Integer	4401	Total count of broadband serviceable locations for which the provider reports business fixed broadband service for the identified technology.
unit_count_bus	Integer	4983	Total count of units for broadband serviceable locations for which the provider reports business fixed broadband service for the identified technology.

3.1.3.4 Provider Summary - Mobile Broadband

This file contains summary information about the mobile broadband data submitted in a biannual submission in Comma Separated Value (CSV) format.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_mobile_broadband_provider_summary_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
provider_id	Integer	999100	Unique identifier for the mobile broadband service provider.
holding_company	String	Acme Broadband LLC	Name of the holding company for the mobile broadband service provider.

Field	Data Type	Example	Description / Notes
technology_code	Integer	400	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*
technology_code_desc	String	4G LTE	Name of the technology used for the deployed service. *- Value is one of the following:* ▪ *3G* ▪ *4G LTE* ▪ *5G-NR (7/1 Mbps)* ▪ *5G-NR (35/3 Mbps)*
area_stationary	Integer	461150	Total area in square kilometers for which the provider reports mobile broadband service for the identified technology / speed in an outdoor stationary environment.
area_invehicle	Integer	293371	Total area in square kilometers for which the provider reports mobile broadband service for the identified technology / speed in an in-vehicle mobile environment.

3.1.3.5 Fixed Broadband Summary by Geography Type

These two sets of files, described below, contain summary information about the percentage of units served by fixed broadband technologies and certain maximum advertised download and upload speed tiers. The data are taken from the availability data submitted by all fixed broadband providers in their biannual submissions.

3.1.3.5.1 Fixed Broadband Summary by Geography Type: State, County, Congressional District, Tribal Areas, CBSA (MSA)

This file contains summary information on the percentage of units served by fixed broadband technologies and certain maximum advertised download and upload speed tiers in all of the following geographic areas: Nationwide, State, County, Congressional District, Tribal Area, and CBSA.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_fixed_broadband_summary_by_geography_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
area_data_type	String	Total	Type of area across which broadband data are summarized. *- Value is one of the following:* ▪ *Nontribal* ▪ *Rural* ▪ *Total* ▪ *Tribal* ▪ *Urban*
geography_type	String	State	Type of geography across which broadband data are summarized. *- Value is one of the following:* ▪ *National* ▪ *State* ▪ *County* ▪ *Congressional District* ▪ *Census Place* ▪ *Tribal CBSA (MSA)*
geography_id	String	11	Unique geographic identifier for the identified geography.
geography_desc	String	District of Columbia	Short description of the identified geography.
geography_desc_ full	String	District of Columbia	Full description of the identified geography.
total_units	Integer	40,675	The total number of units in the geography. This is a sum of the units in all of the broadband serviceable locations, taken from the Broadband Serviceable Location Fabric, in the geography.
biz_res	String	B	Enumerated character identifying whether the service available at the location is offered only to business customers, only to residential customers, or to both business and residential customers. *- Value is one of the following codes:* *B – Business-only location* *R – Residential-only location* *X – Business and Residential location*
technology	String	Fiber	Technology used for the deployed service. *- Value is one of the following:* ▪ *Cable* ▪ *Copper* ▪ *Fiber* ▪ *Geostationary Satellite* ▪ *Non-geostationary Satellite*

Field	Data Type	Example	Description / Notes
			▪ *Licensed Fixed Wireless* ▪ *Unlicensed Fixed Wireless* ▪ *Other* ▪ *All Cable or Fiber* ▪ *All Fixed Wireless* ▪ *All Satellite* ▪ *All Terrestrial* ▪ *All Wired* ▪ *All Wired and Licensed Fixed Wireless* ▪ *All Technologies*
speed_02_02	Decimal (5,4)	0.5765	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with speeds of at least 0.2 / 0.2 Mbps.
speed_10_1	Decimal (5,4)	0.2613	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with speeds of at least 10 / 1 Mbps.
speed_25_3	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with speeds of at least 25 / 3 Mbps.
speed_100_20	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with speeds of at least 100 / 20 Mbps.
speed_250_25	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with speeds of at least 250 / 25 Mbps.
speed_1000_100	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the geography for which providers report fixed broadband service with of at least 1000 / 100 Mbps.

3.1.3.5.2 Fixed Broadband Summary by Geography Type: Census Place

These files contain, for each state, summary information on the percentage of units served by fixed broadband technologies and certain maximum advertised download and upload speed tiers in each Census Place in a selected state.

Files are made available by data as-of date and by state in a zip archive with the following file naming structure:

- *bdc_{State}_fixed_broadband_summary_by_geography_place_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
area_data_type	String	Total	Type of area across which broadband data are summarized. *- Value is one of the following:* ▪ *Nontribal* ▪ *Rural* ▪ *Total* ▪ *Tribal* ▪ *Urban*
geography_type	String	Census Place	Type of geography across which broadband data are summarized. For this file, all of the values in this field are Census Place.
geography_id	Integer	1150000	Unique geographic identifier for the Census Place.
geography_desc	String	Washington	Short description of the identified Census Place.
geography_desc_ full	String	Washington city, DC	Full description of the identified Census Place.
total_units	Integer	381,019	The total number of units in the geography. This is a sum of the units in all of the broadband serviceable locations, taken from the Broadband Serviceable Location Fabric, in the Census Place.
biz_res	String	B	Enumerated character identifying whether the service available at the location is offered only to business customers, only to residential customers, or to both business and residential customers. *- Value is one of the following codes:* *B – Business-only location* *R – Residential-only location* *X – Business and Residential location*
technology	String	Fiber	Technology used for the deployed service. *- Value is one of the following:* ▪ *Cable* ▪ *Copper* ▪ *Fiber* ▪ *Geostationary Satellite* ▪ *Non-geostationary Satellite* ▪ *Licensed Fixed Wireless* ▪ *Unlicensed Fixed Wireless* ▪ *Other* ▪ *All Cable or Fiber* ▪ *All Fixed Wireless* ▪ *All Satellite* ▪ *All Terrestrial* ▪ *All Wired* ▪ *All Wired and Licensed Fixed Wireless*

Field	Data Type	Example	Description / Notes
			▪ *All Technologies*
speed_02_02	Decimal (5,4)	0.5765	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with speeds of at least 0.2 / 0.2 Mbps.
speed_10_1	Decimal (5,4)	0.2613	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with speeds of at least 10 / 1 Mbps.
speed_25_3	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with speeds of at least 25 / 3 Mbps.
speed_100_20	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with speeds of at least 100 / 20 Mbps.
speed_250_25	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with speeds of at least 250 / 25 Mbps.
speed_1000_100	Decimal (5,4)	0.0000	Calculated percentage of units for broadband serviceable locations contained within the Census Place for which providers report fixed broadband service with of at least 1000 / 100 Mbps.

3.1.3.6 Mobile Broadband Summary by Geography Type

These two sets of files, described below, contain summary information about the percentage of area served by mobile broadband technologies and environments. The data are taken from the mobile availability data submitted by all mobile broadband providers in their biannual submissions.

3.1.3.6.1 Mobile Broadband Summary by Geography Type: State, County, Congressional District, Tribal Areas, CBSA (MSA)

This file contains summary information on the percentage of area served by mobile broadband technologies and environments (outdoor stationary or in-vehicle mobile) in the following geographic areas: Nationwide, State, County, Congressional District, Tribal Area, and CBSA.

Files are made available by data as-of date in a zip archive with the following file naming structure:

- *bdc_us_mobile_broadband_summary_by_geography_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
area_data_type	String	Total	Type of area across which broadband data are summarized. *- Value is one of the following:* ▪ *Nontribal* ▪ *Rural* ▪ *Total* ▪ *Tribal* ▪ *Urban*
geography_type	String	State	Type of geography across which broadband data are summarized. For this file, all of the values in this field are Census Place.
geography_id	String	11	Unique geographic identifier for the identified Census Place.
geography_desc	String	District of Columbia	Short description of the identified Census Place.
geography_desc_full	String	District of Columbia	Full description of the identified Census Place.
total_area	Integer	40,675	Area, in square kilometers, of the identified Census Place.
mobilebb_3g_area_st_pct	Decimal (5,4)	0.0000	Calculated percentage of area within the Census Place for which providers report 3G mobile broadband service in an outdoor stationary environment.
mobilebb_3g_area_iv_pct	Decimal (5,4)	0.0000	Calculated percentage of area within the Census Place for which providers report 3G mobile broadband service in an in-vehicle mobile environment.
mobilebb_4g_area_st_pct	Decimal (5,4)	1.0000	Calculated percentage of area within the Census Place for which providers report 4G LTE mobile broadband service in an outdoor stationary environment.
mobilebb_4g_area_iv_pct	Decimal (5,4)	0.9965	Calculated percentage of area within the Census Place for which providers report 4G LTE mobile broadband service in an in-vehicle mobile environment.
mobilebb_5g_spd1_area_st_pct	Decimal (5,4)	1.0000	Calculated percentage of area within the Census Place for which providers report 5G-NR mobile broadband service with speeds of at least 7 / 1 Mbps in an outdoor stationary environment.
mobilebb_5g_spd1_area_iv_pct	Decimal (5,4)	0.9879	Calculated percentage of area within the Census Place for which providers report 5G-NR mobile broadband service with speeds of at least 7 / 1 Mbps in an in-vehicle mobile environment.

Field	Data Type	Example	Description / Notes
mobilebb_5g_spd2_area_st_pct	Decimal (5,4)	0.9931	Calculated percentage of area within the Census Place for which providers report 5G-NR mobile broadband service with speeds of at least 35 / 3 Mbps in an outdoor stationary environment.
mobilebb_5g_spd2_area_iv_pct	Decimal (5,4)	0.8561	Calculated percentage of area within the Census Place for which providers report 5G-NR mobile broadband service with speeds of at least 35 / 3 Mbps in an in-vehicle mobile environment.

3.1.3.6.2 Mobile Broadband Summary by Geography Type: Census Place

These files contain, for each state, summary information on the percentage of area served by mobile broadband technologies environments (outdoor stationary or in-vehicle mobile) in each Census Place in a selected state.

Files are made available by data as-of date and by state in a zip archive with the following file naming structure:

- *bdc_{State}_mobile_broadband_summary_by_geography_place_{Data As-of Date}_{Revision Date}.zip*

Specifications for the tabular data in this CSV file are provided in the table below:

Field	Data Type	Example	Description / Notes
area_data_type	String	Total	Type of area across which broadband data are summarized. *- Value is one of the following:* ▪ *Nontribal* ▪ *Rural* ▪ *Total* ▪ *Tribal* ▪ *Urban*
geography_type	String	State	Type of geography across which broadband data are summarized. *- Value is one of the following:* ▪ *National* ▪ *State* ▪ *County* ▪ *Congressional District* ▪ *Census Place* ▪ *Tribal* ▪ *CBSA (MSA)*
geography_id	String	11	Unique geographic identifier for the identified Census Place.
geography_desc	String	District of Columbia	Short description of the identified geography.

Field	Data Type	Example	Description / Notes
geography_desc_full	String	District of Columbia	Full description of the identified geography.
total_area	Integer	40,675	Area, in square kilometers, of the identified Census Place.
mobilebb_3g_area_st_pct	Decimal (5,4)	0.0000	Calculated percentage of area within the geography for which providers report 3G mobile broadband service in an outdoor stationary environment.
mobilebb_3g_area_iv_pct	Decimal (5,4)	0.0000	Calculated percentage of area within the geography for which providers report 3G mobile broadband service in an in-vehicle mobile environment.
mobilebb_4g_area_st_pct	Decimal (5,4)	1.0000	Calculated percentage of area within the geography for which providers report 4G LTE mobile broadband service in an outdoor stationary environment.
mobilebb_4g_area_iv_pct	Decimal (5,4)	0.9965	Calculated percentage of area within the geography for which providers report 4G LTE mobile broadband service in an in-vehicle mobile environment.
mobilebb_5g_spd1_area_st_pct	Decimal (5,4)	1.0000	Calculated percentage of area within the geography for which providers report 5G-NR mobile broadband service with speeds of at least 7 / 1 Mbps in an outdoor stationary environment.
mobilebb_5g_spd1_area_iv_pct	Decimal (5,4)	0.9879	Calculated percentage of area within the geography for which providers report 5G-NR mobile broadband service with speeds of at least 7 / 1 Mbps in an in-vehicle mobile environment.
mobilebb_5g_spd2_area_st_pct	Decimal (5,4)	0.9931	Calculated percentage of area within the geography for which providers report 5G-NR mobile broadband service with speeds of at least 35 / 3 Mbps in an outdoor stationary environment.
mobilebb_5g_spd2_area_iv_pct	Decimal (5,4)	0.8561	Calculated percentage of area within the geography for which providers report 5G-NR mobile broadband service with speeds of at least 35 / 3 Mbps in an in-vehicle mobile environment.

3.2 Data by Provider

On the By Provider tab of the National Broadband Map Data Download page, users must first select the Availability Data As Of date (vintage) and the provider for which they wish to download availability data. Users can then download various datasets for the selected provider, including data on the provider's fixed broadband locations served, mobile coverage areas, and/or supporting data. For information on how filers report fixed broadband availability data, see the Data Specifications for Biannual Submissions of BDC Subscription, Availability, and Supporting Data document at https://us-fcc.box.com/v/bdc-availability-spec.

Data Name	Description / Notes
Provider-specific Fixed Broadband Locations	A list of locations served by a selected provider, along with the availability data submitted by that provider for each location.
Provider-specific Mobile Broadband H3 Coverage	Coverage maps with H3 Geospatial Indexing-based polygon GIS data indicating the extent of the identified service provider's mobile broadband service for particular technologies, minimum speeds, and handset modeling assumptions (i.e., stationary only vs. both stationary and in-vehicle mobile).
Fixed Broadband Coverage Methodology Information	Information about how the filer generated the coverage maps or lists of addresses / locations for a fixed service provider, including: ▪ identification of the methodologies used to generate coverage data; ▪ explanation of how the methodologies were implemented; and ▪ the distances from aggregation points, to the extent relevant.
Fixed Wireless Propagation Modeling Information	Information on each propagation model and planning tool used to generate the coverage maps for a fixed wireless service provider.
Fixed Wireless Clutter Category Data	Information on each clutter category used in the propagation modeling used to generate the coverage maps for a fixed wireless service provider.
Fixed Wireless Base Station Location and Height	Information on each base station used in the propagation modeling that generated the coverage maps for a fixed wireless service provider.
Fixed Wireless Base Station Carriers	Infrastructure information on the carriers (i.e., antennas) used by each base station in the propagation modeling that generated the coverage maps for a fixed wireless service provider.
Fixed Wireless Link Budget Parameters	Parameters and values included in all applicable link budgets used in the propagation modeling that generated the coverage maps for a fixed wireless service provider.
Mobile Propagation Modeling Information	Information on each propagation model and planning tool used to generate the coverage maps for a mobile service provider.
Mobile Clutter Category Data	List of clutter categories used, a description of each clutter category, and a propagation loss value due to clutter for each category used in the propagation modeling used to generate the coverage maps for a mobile wireless service provider.
Mobile Link Budget Parameters	Parameters and values included in all applicable link budgets used to generate the coverage maps for a mobile service provider at the defined coverage map speeds.
Mobile Link Budget Rationale	Information providing the rationale for using specific values in each link budget.
Mobile Link Budget Description	Information describing how the entity developed the link budget.
Mobile Model and Link Budget Association	Information associating each propagation model with each link budget.

3.2.1 Provider-specific Fixed Broadband Locations

Each file contains records of the locations the selected provider reported making fixed broadband service available to for the selected as-of date. The Location IDs match those in the Broadband Serviceable Location Fabric. The file includes, for each location, the service availability data reported by the provider, as well as the census block and H3 resolution-8 hexagon within which the location falls.

The files are available for download in Comma Separated Value (CSV) format by state, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_{Provider ID}_{Technology}_fixed_broadband_{Data As-of Date}_{Revision Date}.zip*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the fixed service provider.
brand_name	String	Acme Telecom	Name of the entity or service advertised or offered to consumers.
location_id	String	1357135307	Unique identifier for the broadband serviceable fabric location.
technology	Integer	50	Code for the technology used for the deployed service. *- Value is one of the following codes:* *10 – Copper* *40 – Cable* *50 – Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*
max_advertised_download_speed	Integer	1000	Maximum advertised download speed offered at the location in Mbps.
max_advertised_upload_speed	Integer	1000	Maximum advertised upload speed associated with the maximum advertised download speed offered at the location in Mbps.

Field	Data Type	Example	Description / Notes
low_latency	Boolean Integer	1	Boolean integer flag indicating whether or not the offered service is low latency, defined as having round-trip latency of less than or equal to 100 ms based on the 95th percentile of measurements. *- Value is one of the following codes:* *0 – False* *1 – True*
business_ residential_ code	Enumerated String {1}	B	Enumerated character identifying whether the service at the location is offered only to business customers, only to residential customers, or to both business and residential customers. *- Value is one of the following codes:* *B – Business-only location* *R – Residential-only location* *X – Business and Residential location*
state_usps	Enumerated String {2}	DC	2-character USPS abbreviation for the state/territory in which the Broadband Serviceable Location is located. *- Value is a valid state USPS abbreviation from the latest U.S. Census Bureau data.*
block_geoid	String {15}	110010106033002	15-digit U.S. Census Bureau FIPS code for the census block in which the Broadband Serviceable Location is located. *- Value is a valid census block from the latest U.S. Census Bureau decennial data.*
h3_res8_id	String {15}	882aa8458dfffff	15-character hexadecimal index for the parent H3 resolution-8 hexagonal cell of the resolution9 hexagonal cell in which the Broadband Serviceable Location falls. Because resolution-9 cells are not coextensive with their resolution-8 parents, a Location may fall outside the parent resolution-8 cell.

3.2.2 Provider-specific Mobile Availability Data

3.2.2.1 Provider-specific Mobile Broadband H3 Coverage Maps

Each file is available in one of two GIS data formats (ESRI Shapefile or GeoPackage) and contains polygon geometries and associated data attributes representing the H3 resolution 9 hexagonal cells where the selected provider reported mobile broadband coverage in the BDC for a particular technology and as-of date. An H3 cell is considered covered if its centroid lies within a provider's raw coverage polygons.

Files are made available by state, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_{Provider ID}_{Technology}_mobile_broadband_h3_{Data As-of Date}_{Revision Date}.zip*

Below is the specification for the GIS data files available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
providerid	Integer	999100	Unique identifier for the mobile service provider.
brandname	String	Acme Telecom	Name of the entity or service advertised or offered to consumers.
technology	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*
mindown	Decimal (3,2)	7.0	Minimum download speed for modeled coverage in Mbps. *- Value is 0.2 when technology value is 300 (i.e., 3G), is 5.0 when technology value is 400 (i.e., 4G LTE), and is either 7.0 or 35.0 when technology value is 500 (i.e., 5G-NR).*
minup	Decimal (3,2)	1.0	Minimum upload speed for modeled coverage in Mbps. *- Value is 0.05 when technology value is 300 (i.e., 3G), is 1.0 when technology value is 400 (i.e., 4G LTE), and is either 1.0 or 3.0 when technology value is 500 (i.e., 5G-NR).*
minsignal	Integer	-110	Minimum signal strength for modeled coverage assuming an outdoor stationary environment from 50 to 120 dBm in 10 dB increments. *- Value represents predicted RSSI signal strength when technology value is 300 (i.e., 3G) or predicted RSRP signal strength when technology value is 400 or 500 (i.e., 4G LTE or 5G-NR).* *- Value may be null when technology value is 300 (i.e., 3G) and the area overlaps with another map for the provider with the same stationary value where the technology value is 400 or 500 (i.e., 4G LTE or 5G-NR).* *- Values are between ≥ -120 and ≤ -50.*

Field	Data Type	Example	Description / Notes
environmnt	Enumerated Integer	1	Integer code indicating whether the area is modeled to have coverage when the user equipment is in an outdoor stationary environment only or in both in-vehicle mobile and outdoor stationary environments. *- Value is one of the following codes:* *0 – Outdoor stationary only* *1 – In-vehicle mobile and outdoor stationary*
h3_res9_id	String {15}	892aa8458c7ffff	15-character hexadecimal index for the H3 resolution 9 hexagonal cell for which coverage is reported.

3.2.2.2 Provider-specific Mobile Broadband Raw Coverage Maps

Each file is available in one of two GIS data formats (ESRI Shapefile or GeoPackage) and contains polygon geometries and associated data attributes representing the selected provider reported mobile broadband coverage in the BDC for a particular technology and as-of date.

Files are made available by state, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_{Provider ID}_{Technology}_mobile_broadband_{Data As-of Date}_{Revision Date}.zip*

Below is the specification for the GIS data files available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
providerid	Integer	999100	Unique identifier for the mobile service provider.
brandname	String	Acme Telecom	Name of the entity or service advertised or offered to consumers.
technology	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*
mindown	Decimal (3,2)	7.0	Minimum download speed for modeled coverage in Mbps. *- Value is 0.2 when technology value is 300 (i.e., 3G), is 5.0 when technology value is 400 (i.e., 4G LTE), and is either 7.0 or 35.0 when technology value is 500 (i.e., 5G-NR).*

Field	Data Type	Example	Description / Notes
minup	Decimal (3,2)	1.0	Minimum upload speed for modeled coverage in Mbps. *- Value is 0.05 when technology value is 300 (i.e., 3G), is 1.0 when technology value is 400 (i.e., 4G LTE), and is either 1.0 or 3.0 when technology value is 500 (i.e., 5G-NR).*
minsignal	Integer	-110	Minimum signal strength for modeled coverage assuming an outdoor stationary environment from 50 to 120 dBm in 10 dB increments. *- Value represents predicted RSSI signal strength when technology value is 300 (i.e., 3G) or predicted RSRP signal strength when technology value is 400 or 500 (i.e., 4G LTE or 5G-NR).* *- Value may be null when technology value is 300 (i.e., 3G) and the area overlaps with another map for the provider with the same stationary value where the technology value is 400 or 500 (i.e., 4G LTE or 5G-NR).* *- Values are between ≥ -120 and ≤ -50.*
environmnt	Enumerated Integer	1	Integer code indicating whether the area is modeled to have coverage when the user equipment is in an outdoor stationary environment only or in both in-vehicle mobile and outdoor stationary environments. *- Value is one of the following codes:* *0 – Outdoor stationary only* *1 – In-vehicle mobile and outdoor stationary*

3.2.3 Provider-specific Fixed Supporting Data

Users can download a zip file that contains the entire set of supporting data submitted by a selected provider for a particular fixed broadband technology and as-of date. Each individual file in the zip file matches the data specifications detailed below. Files are made available by provider, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_supporting_data_{Data As-of Date}_{Revision Date}.zip*

3.2.3.1 Fixed Broadband Coverage Methodology Information

This file contains methodological information about how the entity generated its fixed broadband coverage data in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is a fixed technology.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_fixed_broadband_coverage_methodology_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	50	Code for the technology used for the deployed service. *- Value is one of the following codes:* *10 – Copper* *40 – Cable* *50 – Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*
methodology	String	Buffer around outside plant, Geocode addresses of subscribers	Methodology or methodologies used to generate the coverage data. *- Value is one or more of the following, separated by commas:* ▪ Propagation model ▪ Geocode addresses of subscribers ▪ Geocode addresses of homes passed ▪ Buffer around outside plant ▪ Buffer around central office ▪ Boundary of census block served ▪ On-the-ground location recordings of locations served ▪ Analysis of satellite imagery ▪ Other
explanation	String		Narrative explanation of how the methodology or methodologies were implemented in generating the coverage data.
distance	Integer	25000	The maximum distance from the aggregation point to a served location in feet, rounded to the nearest foot. *- Value may be null if the technology code is either 60 or 61 (Satellite) or 70, 71, or 72 (Terrestrial Fixed Wireless).*

3.2.3.2 Fixed Wireless Propagation Model Details

This file contains records of each propagation model used to model terrestrial fixed wireless broadband coverage in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless or Unlicensed Fixed Wireless and the provider submitted its fixed broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format).

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_propagation_model_details_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
model_id	Text	ITM-1A	Unique identifier for the propagation model used to generate the coverage data. *- Value length must be ≤ 256 characters.*
tool_name	Text	Atoll	Name of the planning tool used to generate the coverage data.
tool_version	Text	3.4.0	Version number of the planning tool used to generate the coverage data.
tool_developer	Text	Forsk	Name of the developer of the planning tool used to generate the coverage data.
model_resolution	Integer	10	Granularity of the model used to generate the coverage data in meters. *- Value may be approximate for models measured in arcseconds (e.g., 1 arcsecond ≈ 30 meters).* *- Value must be > 0 and ≤ 100.*
receiver_height	Decimal	5.5	Height of the receiver / CPE antenna used in modeling in meters. *- Value must be ≥ 4 and ≤ 7.*
terrain_source	String	USGS	Provider or source of terrain data.

Field	Data Type	Example	Description / Notes
terrain_vintage	Date	2021-10-18	Vintage date of terrain data requiring at least the year of the data. *- Value must match valid ISO-8601 date format including, at a minimum, the year, e.g.: YYYY[-MM-DD]*
terrain_resolution	Integer	30	Resolution or granularity of terrain data in meters. *- Value may be approximate for datasets measured in arcseconds (e.g., 1 arcsecond ≈ 30 meters).* *- Value must be > 0 and ≤ 100.*
clutter_source	String	ESA Worldcover	Provider or source of clutter data.
clutter_vintage	Date	2020	Vintage date of terrain data requiring at least the year of the data. *- Value must match valid ISO-8601 date format including, at a minimum, the year, e.g.: YYYY[-MM-DD]*
clutter_resolution	Integer	10	Resolution or granularity of clutter data in meters. *- Value may be approximate for datasets measured in arcseconds (e.g., 1 arcsecond ≈ 30 meters).* *- Value must be > 0 and ≤ 100.*
calibration_flag	Boolean Integer	1	Boolean integer flag of whether the model has been validated and calibrated at least one time using on-the-ground and/or other real-world measurements taken by the provider or its vendor. *- Value must be the following code:* *1 – True*
calibration_date	Date	2021-09-05	Most recent date that the model was calibrated. *- Value may be null.* *- Value must match valid ISO-8601 date format including, at a minimum, the year and month, e.g.: YYYY-MM[-DD] if not null.*
calibration_process	Text		Brief narrative summary of the process used to calibrate the model. *- Value may be null.*

3.2.3.3 Fixed Wireless Propagation Model Conditions Explanation

This file contains an explanation of the conditions under which, or the base stations for which, each model and tool apply for providers that use multiple tools or models. The file is available in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless or Unlicensed Fixed Wireless and the provider submitted its fixed

broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format). Additionally, this file may be omitted if the provider only uses a single model and did not enter an explanation as part of its submission.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_propagation_model_conditions_explanation_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
explanation	String		Explanation of the conditions under or base stations for which each model and tool (identified in the Fixed Wireless Propagation Model Details file) apply.

3.2.3.4 Fixed Wireless Clutter Category Data

This file contains records of each clutter category used in the fixed wireless propagation model in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless or Unlicensed Fixed Wireless and the provider submitted its fixed broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format).

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_clutter_category_data_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.

Field	Data Type	Example	Description / Notes
technology_code	Integer	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
category_number	Integer	11	Numerical identifier corresponding to each distinct clutter category. *- Value must be ≥ 0.*
category_description	String	Evergreen Forest	Short description or name of the clutter category. *- Value length must be < 256 characters.*
constant_signal_loss	Decimal (4,2)	3.0	Constant clutter loss used in propagation modeling for the clutter category in dB. *- Value may be null if the variable_signal_loss value is not null.* *- Value must be ≥ 0 if not null.*
variable_signal_loss	Decimal (4,2)		Variable clutter loss as a function of distance used in propagation modeling for the clutter category in dB/meter. *- Value may be null if the constant_signal_loss value is not null.* *- Value must be ≥ 0 if not null.*
model_id	Text	ITM-1A	Unique identifier for the propagation model associated with this clutter category. *- Value must correspond to a model_id value in the Fixed Wireless Propagation Modeling Information file.*

3.2.3.5 Fixed Wireless Base Station ID and Height

This file contains records of each base station used to model terrestrial fixed wireless broadband coverage in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless, Unlicensed Fixed Wireless, or Licensed-by-Rule Fixed Wireless and the provider submitted its fixed broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format).

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_base_station_location_and_height_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
site_id	String	VA0128	Unique site ID for the base station to which this data record applies. *- Value length must be ≤ 256 characters.*
site_height	Decimal (5,1)	150.0	Height of the base station site above-mean-sea-level (AMSL) in meters *- Value must be ≥ -100 and ≤ 6500.*
model_id	String	ITM-1A	Unique identifier for the propagation model used to generate the coverage data for the base station. *- Value must correspond to a model_id value in the Fixed Wireless Propagation Modeling Information file.*
morphology	Enumerated Integer	2	Indicates the morphology of the area for which coverage is modeled from the base station using one of multiple possible values. *- Value must be one of the following codes:* *1 – Urban* *2 – Suburban* *3 – Rural* *0 – Other*

3.2.3.6 Fixed Wireless Base Station Carriers

This file contains records of each carrier (i.e., antenna) for each sector of the fixed wireless provider's base stations (identified in the corresponding Base Station Location and Height data file) in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless, Unlicensed Fixed Wireless, or Licensed-by-Rule Fixed Wireless and the provider submitted its fixed broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format).

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_base_station_carriers_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
site_id	String	VA0128	Unique base station site ID for which this record applies. *- Value must correspond to a site_id value in the Fixed Wireless Base Station Location and Height file.* *- Value length must be < 256 characters.*
antenna_model	String	PCS-06515-0DH	The deployed antenna make and model.
technology	Enumerated Integer	120	Technology standard used by the channel/carrier described in this record from one of multiple values. *- Value must be one of the following codes:* *101 – 802.11b* *102 – 802.11a* *103 – 802.11g* *104 – 802.11n / WiFi 4* *105 – 802.11ac / WiFi 5* *106 – 802.11ax / WiFi 6* *107 – 802.11be / WiFi 7* *120 – 802.11ad* *121 – 802.11ay* *130 – 802.11ac-derived OFDM* *140 – 802.16* *201 – OFDM Proprietary* *401 – 4G LTE (3GPP release 8)* *402 – 4G LTE (3GPP release 9)* *403 – 4G LTE (3GPP release 10)* *404 – 4G LTE (3GPP release 11)* *405 – 4G LTE (3GPP release 12)*

Field	Data Type	Example	Description / Notes
			406 – 4G LTE (3GPP release 13) *407 – 4G LTE (3GPP release 14)* *408 – 4G LTE (3GPP release 15)* *409 – 4G LTE (3GPP release 16)* *410 – 4G LTE (3GPP release 17)* *501 – 5G-NR (3GPP release 15)* *502 – 5G-NR (3GPP release 16)* *503 – 5G-NR (3GPP release 17)* *0 – Other*
downlink_ link_budget_id	String	VA1238DL	Unique identifier for the downlink link budget assumed in generating the coverage data for the base station carrier. *- Value must correspond to a corresponding downlink link_budget_id value in the Fixed Wireless Link Budget Parameters file*.
uplink_ link_budget_id	String	VA1238UL	Unique identifier for the uplink link budget assumed in generating the coverage data for the base station carrier. *- Value must correspond to a corresponding uplink link_budget_id value in the Fixed Wireless Link Budget Parameters file*.
downlink_carrier_ aggregation_ frequencies	String	737.5, 2172.625	List all downlink RF carrier center frequencies, separated by a comma, that are deployed in carrier aggregation with this RF carrier. *- Value may be null if downlink carrier aggregation is not used for this RF carrier.*
uplink_carrier_ aggregation_ frequencies	String	707.5, 1772.625	List all uplink RF carrier center frequencies, separated by a comma, that are deployed in carrier aggregation with this RF carrier. *- Value may be null if uplink carrier aggregation is not used for this RF carrier.*

3.2.3.7 Fixed Wireless Link Budget Parameters

This file contains records of each fixed wireless link budget in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Licensed Fixed Wireless, Unlicensed Fixed Wireless, or Licensed-by-Rule Fixed Wireless and the provider submitted its fixed broadband availability data as Fixed Broadband Availability Coverage Maps (i.e., in GIS format).

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_link_budget_parameters_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	UL Example	DL Example	Description / Notes
frn	String {10}	0032176356	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	999100	Unique identifier for the service provider.
technology_code	Integer	70	70	Code for the technology used for the deployed service. *- Value is one of the following codes:* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless*
link_budget_id	String	VA1238UL	VA1238DL	Unique identifier to identify the link budget. *- Value length must be < 256 characters.*
link_direction	Enumerated String {1}	U	D	Direction of the link budget described in this record. *- Value must be one of the following codes:* *U – Uplink* *D – Downlink*
technology	Enumerated Integer	106	106	Technology standard used by the link budget described in this record from one of multiple values. *- Value must be one of the following codes:* *101 – 802.11b* *102 – 802.11a* *103 – 802.11g* *104 – 802.11n / WiFi 4* *105 – 802.11ac / WiFi 5* *106 – 802.11ax / WiFi 6* *107 – 802.11be / WiFi 7* *120 – 802.11ad* *121 – 802.11ay* *130 – 802.11ac-derived OFDM* *140 – 802.16* *201 – OFDM Proprietary* *401 – 4G LTE (3GPP release 8)*

Field	Data Type	UL Example	DL Example	Description / Notes
				402 – 4G LTE (3GPP release 9) *403 – 4G LTE (3GPP release 10)* *404 – 4G LTE (3GPP release 11)* *405 – 4G LTE (3GPP release 12)* *406 – 4G LTE (3GPP release 13)* *407 – 4G LTE (3GPP release 14)* *407 – 4G LTE (3GPP release 14)* *408 – 4G LTE (3GPP release 15)* *409 – 4G LTE (3GPP release 16)* *410 – 4G LTE (3GPP release 17)* *501 – 5G-NR (3GPP release 15)* *502 – 5G-NR (3GPP release 16)* *503 – 5G-NR (3GPP release 17)* *0 – Other*
duplex_scheme	Enumerated String {1}	D	D	Duplex scheme used in the link budget from one of two possible values representing either Frequency Division Duplexing or Time Division Duplexing. *- Value must be one of the following codes:* *F – FDD* *D – TDD*
allocation_ratio	String	2:1	2:1	Downlink to uplink time allocation ratio, e.g., “2:1”. *- Value may be null.* *- Value must match valid ratio format: "<numeric>:<numeric>", if not null, and each numeric value must be an integer > 0.*
morphology	Enumerated Integer	2	2	Indicates the morphology of the area used in the link budget using one of multiple possible values. *- Value must be one of the following codes:* *1 – Urban* *2 – Suburban* *3 – Rural* *0 – Other*
target_speed	Decimal (7,2)	250.0	500.0	Target user speeds of the link budget in Mbps. *- Value must be ≥ 0 and ≤ 10000.*

Field	Data Type	UL Example	DL Example	Description / Notes
modulation_scheme	String	256-QAM 3/4	256-QAM 5/6	Modulation and coding scheme to deliver the target user speed of the link budget. *- Value must match a valid modulation scheme format: "<string> <numeric>/<numeric>", and each numeric value must be an integer > 0.*
antenna_configuration	String	2x2	4x4	Typical deployed antenna configuration. *- Value must match a valid matrix format: "<numeric>x<numeric>", and each numeric value must be an integer > 0.*
operational_frequency	Decimal (9,3)	6750.0	6750.0	Center frequency of the operational carrier in MHz. *- Value must be > 0.*
channel_bandwidth	Decimal (6,2)	160.0	160.0	Total bandwidth of the operating channel in MHz. *- Value must be > 0 and ≤ 1000.*
total_subcarriers	Integer	1992	1992	Total number of subcarriers for the channel (i.e., resource element). *- Value may be null if provider does not use OFDM/OFDMA technology.* *- Value must be > 0 if not null.*
subcarrier_spacing	Decimal (8,3)	78.125	78.125	Subcarrier (or resource element) spacing / bandwidth in KHz. *- Value may be null if provider does not use OFDM/OFDMA technology.* *- Value must be ≥ 15 and ≤ 10000 if not null.*
cell_load	Decimal (3,2)	0.5	0.5	Cell loading factor (both own cell and neighboring cells) percentage. *- Value must be ≥ 0.5 and ≤ 1.*
required_subcarriers	Integer	996	996	Number of required subcarriers to deliver the target user speeds. *- Value must be > 0.*
required_sinr	Decimal (4,2)	21.5	27.5	Required signal to interference and noise ratio to deliver the target speeds in dB. *- Value must be ≥ -20 and ≤ 50.*

Field	Data Type	UL Example	DL Example	Description / Notes
spectral_efficiency	Decimal (7,2)	3.2	6.5	Required spectral efficiency to deliver the user speeds at the cell edge in bps / Hz. *- Value must be > 0.*
total_tx_power	Decimal (5,2)	11.00	18.00	Total transmitter power for the cell including multiple transmitters in dBm. *- Value must be > 0.*
total_tx_losses	Decimal (4,2)	0.00	2.00	Total losses in the transmitting path from the amplifier to the antenna in dB. *- Value must be ≥ 0 and ≤ 10.*
tx_antenna_gain	Decimal (4,2)	25.00	18.00	Transmitting antenna gain in dBi. *- Value must be ≥ -20 and ≤ 40.*
total_eirp	Decimal (4,2)	36.00	36.00	Total maximum effective isotropic radiated power in dBm including multiple transmitting antennas. *- Value must be ≥ 0 and ≤ 80.*
eirp_per_subcarrier	Decimal (5,2)	6.02	3.0	Maximum effective isotropic radiated power (including multiple transmitting antennas) per subcarrier in dBm. *- Value must be equal to (<total_eirp>) for downlink or uplink link budgets where the total_subcarriers value is null (i.e., the provider does not use OFDM/OFDMA technology).* *- Value must be ≤ min([<total_eirp>, (<total_eirp> - (10*log(<total_subcarriers>)) + 3)]) for downlink link budgets where the total_subcarriers value is not null (i.e., the provider uses OFDM/OFDMA technology).* *- Value must be ≤ min([<total_eirp>, (<total_eirp> - (10*log(<required_subcarriers>)) + 3)]) for uplink link budgets where the total_subcarriers value is not null (i.e., the provider uses OFDM/OFDMA technology).*
rx_antenna_gain	Decimal (4,2)	18.00	25.00	Receiving antenna gain in dBi. *- Value must be ≥ -20 and ≤ 40.*
total_rx_losses	Decimal (4,2)	0.00	0.00	Total losses in the receiving path from the antenna to the receiver in dB.

Field	Data Type	UL Example	DL Example	Description / Notes
				- *Value must be ≥ 0 and ≤ 10.*
rx_noise_figure	Decimal (4,2)	3.00	3.00	Noise figure of the receiver system in dB. - *Value must be ≥ 0.*
rx_sensitivity	Decimal (5,2)	-100.5	-94.5	Receiver sensitivity in dBm per subcarrier. - *Value must be < 0.*
thermal_noise_power	Decimal (5,2)	-173.98	-173.98	Thermal noise power in dBm per Hz. - *Value must be < 0.*
thermal_noise_power_per_subcarrier	Decimal (5,2)	-125.05	-125.05	Thermal noise power in dBm per subcarrier. - *Value must be < 0.*
total_noise_power_per_subcarrier	Decimal (5,2)	-122.05	-122.05	Total (thermal & receiver) noise power in dBm per subcarrier. - *Value must be < 0.*
fading_std_deviation	Decimal (4,2)	6.5	6.5	Standard deviation of the log-normal signal slow fading in dB. - *Value must be > 0.*
cell_edge_probability	Decimal (3,2)	0.99	0.99	Desired percentage probability of receiving the signal at or above the receiver sensitivity at the cell coverage boundary. - *Value must be ≥ 0.75 and ≤ 1.*
fade_margin	Decimal (4,2)	15.00	15.00	Signal slow fading margin in dB required to deliver the desired cell edge reliability. - *Value must be > 0.*
penetration_margin	Decimal (4,2)	0.00	0.00	Additional signal loss in dB due to surrounding obstructions when the receiver is inside a vehicle or building. - *Value may be null.* - *Value must be ≥ 0 if not null.*
other_losses	Decimal (4,2)	0.00	0.00	Any other unaccounted signal losses in dB. - *Value may be null.* - *Value must be ≥ 0 if not null.*
other_gains	Decimal (4,2)	0.00	0.00	Other unaccounted gains in dB. - *Value may be null.* - *Value must be ≥ 0 if not null.*

Field	Data Type	UL Example	DL Example	Description / Notes
total_margins	Decimal (4,2)	15.00	15.00	Total net margins in dB. - *Value must be ≥ 0.*
mapl	Decimal (5,2)	107.0	107.5	Maximum allowable path loss of the link in dB. - *Value must be > 0.*
minimum_signal_ strength	Decimal (5,2)	-103.5	-104.5	Minimum required signal strength in dBm per subcarrier at the receiver to deliver the specified performance targets (e.g., RSRP for 4G LTE). - *Value must be < 0.*

3.2.4 Provider-specific Mobile Supporting Data

These files contain the entire set of supporting data submitted by the identified service provider for a given mobile service or technology and as-of date matching the data specifications detailed below. Files are made available by provider, technology, and data as-of date in a zip archive with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_supporting_data_{Data As-of Date}_{Revision Date}.zip*

3.2.4.1 Mobile Propagation Model Details

This file contains records of each propagation model used to model mobile broadband or voice coverage in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_propagation_model_details_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.

Field	Data Type	Example	Description / Notes
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
model_id	String	ITM-1A	Unique identifier for the propagation model used to generate the coverage data.
tool_name	String	Atoll	Name of the planning tool used to generate the coverage data.
tool_version	String	3.4.0	Version number of the planning tool used to generate the coverage data.
tool_developer	String	Forsk	Name of the developer of the planning tool used to generate the coverage data.
model_resolution	Integer	10	Granularity of the model used to generate the coverage data in meters. *- Value may be approximate for models measured in arcseconds (e.g., 1 arcsecond ≈ 30 meters).* *- Value must be > 0 and ≤ 100.*
receiver_height	Decimal	1.5	Height of the receiver used in modeling in meters. *- Value must be ≥ 1.5.*
terrain_source	String	USGS	Provider or source of terrain data.
terrain_vintage	Date	2021-10-18	Vintage date of terrain data requiring at least the year of the data. *- Value must match valid ISO-8601 date format including, at a minimum, the year, e.g.: YYYY[-MM-DD]*
terrain_resolution	Integer	30	Resolution or granularity of terrain data in meters. *- Value may be approximate for datasets measured in arcseconds (e.g., 1 arcsecond ≈30 meters).* *- Value must be > 0 and ≤ 100.*
clutter_source	String	ESA Worldcover	Provider or source of clutter data.
clutter_vintage	Date	2020	Vintage date of terrain data requiring at least the year of the data. *- Value must match valid ISO-8601 date format including, at a minimum, the year, e.g.: YYYY[-MM-DD]*

Field	Data Type	Example	Description / Notes
clutter_resolution	Integer	10	Resolution or granularity of clutter data in meters. *- Value may be approximate for datasets measured in arcseconds (e.g., 1 arcsecond ≈ 30 meters).* *- Value must be > 0 and ≤ 100.*
calibration_flag	Boolean Integer	1	Boolean integer flag of whether the model has been validated and calibrated at least one time using on-the-ground and/or other real-world measurements taken by the provider or its vendor. *- Value must be the following code:* *1 – True*
calibration_date	Date	2021-09-05	Most recent date that the model was calibrated. *- Value must match valid ISO-8601 date format including, at a minimum, the year and month, e.g.: YYYY-MM[-DD]*
calibration_process	Text		Brief narrative summary of the process used to calibrate the model.

3.2.4.2 Mobile Propagation Model Conditions Explanation

This file contains an explanation of the conditions under which or base stations for which each model and tool apply for entities that use multiple tools or models in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_propagation_model_conditions_explanation_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*

Field	Data Type	Example	Description / Notes
explanation	String		Explanation of the conditions under or base stations for which each model and tool (identified in the Mobile Propagation Model Details file) apply. *- Value may be null if only a single model is used.*

3.2.4.3 Mobile Clutter Category Data

This file contains records of each clutter category used in the mobile propagation model in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_clutter_category_data_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
category_number	Integer	11	Numerical identifier corresponding to each distinct clutter category. *- Value must be ≥ 0.*
category_description	String	Evergreen Forest	Short description or name of the clutter category. *- Value length must be < 256 characters.*
constant_signal_loss	Decimal (4,2)	3.0	Constant clutter loss used in propagation modeling for the clutter category in dB. *- Value may be null if the variable_signal_loss value is not null.* *- Value must be ≥ 0 if not null.*

Field	Data Type	Example	Description / Notes
variable_signal_loss	Decimal (4,2)		Variable clutter loss as a function of distance used in propagation modeling for the clutter category in dB/meter. *- Value may be null if the constant_signal_loss value is not null.* *- Value must be ≥ 0 if not null.*
model_id	Text	ITM-1A	Unique identifier for the propagation model associated with this clutter category. *- Value must correspond to a model_id value in the Fixed Wireless Propagation Modeling Information file.*

3.2.4.4 Mobile Link Budget Parameters

This file contains records of each mobile link budget in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_link_budget_parameters_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	UL Example	DL Example	Description / Notes
frn	String {10}	0032176356	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	999100	Unique identifier for the service provider.
technology_code	Integer	500	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
link_budget_id	String	VA1238UL	VA1238DL	Unique identifier to identify the link budget. *- Value length must be ≤ 256 characters.*

Field	Data Type	UL Example	DL Example	Description / Notes
link_direction	Enumerated String {1}	U	D	Direction of the link budget described in this record. *- Value must be one of the following codes:* *U – Uplink* *D – Downlink*
technology	Enumerated Integer	501	501	Technology standard used by the link budget described in this record from one of multiple values. *- Value must be one of the following codes:* *310 – 3G (CDMA-based)* *320 – 3G (GSM-based)* *401 – 4G LTE (3GPP release 8)* *402 – 4G LTE (3GPP release 9)* *403 – 4G LTE (3GPP release 10)* *404 – 4G LTE (3GPP release 11)* *405 – 4G LTE (3GPP release 12)* *406 – 4G LTE (3GPP release 13)* *407 – 4G LTE (3GPP release 14)* *408 – 4G LTE (3GPP release 15)* *409 – 4G LTE (3GPP release 16)* *410 – 4G LTE (3GPP release 17)* *501 – 5G-NR (3GPP release 15)* *502 – 5G-NR (3GPP release 16)* *503 – 5G-NR (3GPP release 17)* *0 – Other*
duplex_scheme	Enumerated String {1}	F	F	Duplex scheme used in the link budget from one of two possible values representing either Frequency Division Duplexing or Time Division Duplexing (including CSMA/CA). *- Value must be one of the following codes:* *F – FDD* *D – TDD*
allocation_ratio	String	2:1	2:1	Downlink to uplink time allocation ratio, e.g., “2:1”. *- Value may be null.* *- Value must match valid ratio format: "<numeric>:<numeric>", if not null, and each numeric value must be an integer > 0.*

Field	Data Type	UL Example	DL Example	Description / Notes
morphology	Enumerated Integer	2	2	Indicates the morphology of the area used in the link budget using one of multiple possible values. *- Value must be one of the following codes:* *1 – Urban* *2 – Suburban* *3 – Rural* *0 – Other*
propagation_ conditions	Enumerated Integer	0	0	Integer code, taken from the two options below, indicating the propagation conditions used in the link budget. *- Value must be one of the following:* *0 – Outdoor stationary* *1 – In-vehicle mobile*
target_speed	Decimal (7,2)	3.0	35.0	Target user speeds of the link budget in Mbps. *- Value must be > 0 for any technology for link budgets used to generate mobile voice availability data.* *- Value must be 0.2 or 0.05 when link_direction value is "D" or "U", respectively, and when technology value is 310 or 320 (i.e., 3G) for link budgets used to generate mobile broadband availability data.* *- Value must be 5 or 1 when link_direction value is "D" and "U", respectively, and when technology value is 401, 402, 403, 404, 405, 406, or 407 (i.e., 4G LTE) for link budgets used to generate mobile broadband availability data.* *- Value must be either 35 / 7 or either 3 / 1 when link_direction value is "D" or "U", respectively, and when technology value is 501, 502, or 503 (i.e., 5G-NR) for link budgets used to generate mobile broadband availability data.*

Field	Data Type	UL Example	DL Example	Description / Notes
modulation_scheme	String	16-QAM 2/3	16-QAM 2/3	Modulation and coding scheme to deliver the target user speed of the link budget. *- Value must match a valid modulation scheme format: "<string> <numeric>/<numeric>", and each numeric value must be an integer > 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
antenna_configuration	String	1x2	2x2	Typical deployed antenna configuration (I.e., number of transmit ports by number of receive ports). *- Value must match a valid matrix format: "<numeric>x<numeric>", and each numeric value must be an integer > 0.* *- Value must be "1x1 for downlink or uplink link budgets when technology value is 310 or 320 (i.e., 3G) or when the technology does not otherwise support MIMO.*
operational_frequency	Decimal (9,3)	1860.0	1940.0	Center frequency of the operational carrier in MHz. *- Value must be > 0.*
channel_bandwidth	Decimal (6,2)	10.0	10.0	Total bandwidth of the operating channel in MHz. *- Value must be > 0 and ≤ 1000.*
total_subcarriers	Integer	600	600	Total number of subcarriers for the channel (i.e., resource element). *- Value may be null if provider does not use OFDM/OFDMA technology.* *- Value must be > 0 if not null.*
subcarrier_spacing	Decimal (8,3)	15.0	15.0	Subcarrier (or resource element) spacing / bandwidth in KHz. *- Value may be null if provider does not use OFDM/OFDMA technology.* *- Value must be ≥ 15 and ≤ 240 if not null.*
cell_load	Decimal (3,2)	0.5	0.5	Cell loading factor (both own cell and neighboring cells) percentage. *- Value must be ≥ 0.5 and ≤ 1.*

Field	Data Type	UL Example	DL Example	Description / Notes
required_subcarriers	Integer	72	200	Number of required subcarriers to deliver the target user speeds. *- Value must be null for downlink or uplink link budgets where the total_subcarriers value is null (i.e., the provider does not use OFDM/OFDMA technology).* *- Value must be ≥ 0 if not null.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
required_sinr	Decimal (4,2)	0.00	4.00	Required signal to interference and noise ratio to deliver the target speeds in dB. *- Value must be ≥ -20 and ≤ 50.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
spectral_efficiency	Decimal (7,2)	1.00	1.70	Required spectral efficiency to deliver the user speeds at the cell edge in bps / Hz. *- Value must be > 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
total_tx_power	Decimal (5,2)	23.00	30.00	Total transmitter power for the cell including multiple transmitters in dBm. *- Value must be > 0.*
total_tx_losses	Decimal (4,2)	0.00	2.00	Total losses in the transmitting path from the amplifier to the antenna in dB. *- Value must be ≥ 0 and ≤ 10.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
tx_antenna_gain	Decimal (4,2)	-1.00	16.00	Transmitting antenna gain in dBi. *- Value must be ≥ -20 and ≤ 40.*

Field	Data Type	UL Example	DL Example	Description / Notes
total_eirp	Decimal (4,2)	22.00	60.00	Total maximum effective isotropic radiated power in dBm including multiple transmitting antennas. *- Value must be ≥ 0 and ≤ 80.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
eirp_per_subcarrier	Decimal (5,2)	3.42	32.22	Maximum effective isotropic radiated power (including multiple transmitting antennas) per subcarrier in dBm. *- Value must be equal to (<total_eirp>) for downlink or uplink link budgets where the total_subcarriers value is null (i.e., the provider does not use OFDM/OFDMA technology).* *- Value must be ≤ min([<total_eirp>, (<total_eirp> - (10*log(<total_subcarriers>)) + 3)]) for downlink link budgets where the total_subcarriers value is not null (i.e., the provider uses OFDM/OFDMA technology).* *- Value must be ≤ min([<total_eirp>, (<total_eirp> - (10*log(<required_subcarriers>)) + 3)]) for uplink link budgets where the total_subcarriers value is not null (i.e., the provider uses OFDM/OFDMA technology).* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
rx_antenna_gain	Decimal (4,2)	16.00	0.00	Receiving antenna gain in dBi. *- Value must be ≥ -20 and ≤ 40.*
total_rx_losses	Decimal (4,2)	2.00	0.00	Total losses in the receiving path from the antenna to the receiver in dB. *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.* *- Value must be ≥ 0 and ≤ 10.*

Field	Data Type	UL Example	DL Example	Description / Notes
rx_noise_figure	Decimal (4,2)	2.00	10.00	Noise figure of the receiver system in dB. *- Value must be ≥ 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
rx_sensitivity	Decimal (5,2)	-130.21	-118.21	Receiver sensitivity in dBm per subcarrier. *- Value must be < 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
thermal_noise_power	Decimal (5,2)	-173.98	-173.98	Thermal noise power in dBm per Hz. *- Value must be < 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
thermal_noise_power_per_subcarrier	Decimal (5,2)	-132.21	-132.21	Thermal noise power in dBm per subcarrier. *- Value must be equal to (<thermal_noise_power> + 10*log(<channel_bandwidth>)) for downlink or uplink link budgets where the total_subcarriers value is null (i.e., the provider does not use OFDM/OFDMA technology).* *- Value must be < 0.*
total_noise_power_per_subcarrier	Decimal (5,2)	-130.21	-122.21	Total (thermal & receiver) noise power in dBm per subcarrier. *- Value must be equal to (<thermal_noise_power> + 10*log(<channel_bandwidth>) + <rx_noise_figure>) for downlink or uplink link budgets where the total_subcarriers value is null (i.e., the provider does not use OFDM/OFDMA technology).* *- Value must be < 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*

Field	Data Type	UL Example	DL Example	Description / Notes
fading_std_deviation	Decimal (4,2)	8.00	8.00	Standard deviation of the log-normal signal slow fading in dB. - *Value must be > 0.*
cell_edge_probability	Decimal (3,2)	0.9	0.9	Desired percentage probability of receiving the signal at or above the receiver sensitivity at the cell coverage boundary. - *Value must be ≥ 0.9 and ≤ 1.*
fade_margin	Decimal (4,2)	10.25	10.25	Signal slow fading margin in dB required to deliver the desired cell edge reliability. - *Value must be > 0.* - *Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
head_body_loss	Decimal (4,2)	0.00	2.00	Typical signal loss at the operating frequency in dB due to head and/or body obstruction. - *Value must be ≥ 0.* - *Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
interference_margin	Decimal (4,2)	3.00	5.00	Additional signal loss in dB due to interference from adjacent cells due to cell loading. - *Value must be ≥ 0.* - *Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
penetration_margin	Decimal (4,2)	0.00	0.00	Additional signal loss in dB due to surrounding obstructions when the receiver is inside a vehicle. - *Value must be ≥ 0.* - *Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*

Field	Data Type	UL Example	DL Example	Description / Notes
other_losses	Decimal (4,2)	0.00	0.00	Any other unaccounted signal losses in dB. *- Value may be null.* *- Value must be ≥ 0 if not null.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget if not null.*
freq_selection_gain	Decimal (4,2)	0.00	0.00	Dynamic frequency selection gain in dB. *- Value must be ≥ 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
multi_cell_diversity_gain	Decimal (4,2)	2.00	2.00	Multi-cell switching or macro-diversity gain in dB. *- Value must be ≥ 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*
other_gains	Decimal (4,2)	0.00	0.00	Other unaccounted gains in dB. *- Value may be null.* *- Value must be ≥ 0 if not null.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget if not null.*
total_margins	Decimal (4,2)	11.25	15.25	Total net margins in dB. *- Value must be ≥ 0.*
mapl	Decimal (5,2)	136.39	139.18	Maximum allowable path loss of the link in dB. *- Value must be > 0.*

Field	Data Type	UL Example	DL Example	Description / Notes
minimum_signal_strength	Decimal (5,2)	-132.96	-106.96	Minimum required signal strength in dBm per subcarrier at the receiver to deliver the specified performance targets (e.g., RSRP for 4G LTE). *- Value must be < 0.* *- Value for this field must have a corresponding explanation / rationale in the Mobile Link Budget Parameters Rationale file for each link budget.*

3.2.4.5 Mobile Link Budget Parameters Rationale

This file contains an explanation / rationale for the particular values chosen in the provider's link budget parameters in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_link_budget_parameters_rationale_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
link_budget_id	Text	VA1238DL	Unique identifier of a link budget used to generate the mobile coverage data and is associated with at least one propagation model. *- Value length must be < 256 characters.* *- Value must correspond to a link_budget_id value in the Mobile Link Budget Parameters file*.

Field	Data Type	Example	Description / Notes
parameter	Enumerated	total_eirp	Field name identifying the parameter. *- Value must correspond to one of the required fields from the Mobile Link Budget Parameters file from the following:* *{modulation_scheme, required_subcarriers, required_sinr, spectral_efficiency, total_tx_losses, total_eirp, eirp_per_subcarrier, total_rx_losses, rx_noise_figure, rx_sensitivity, thermal_noise_power, total_noise_power_per_subcarrier, fade_margin, head_body_loss, interference_margin, penetration_margin, other_losses, freq_selection_gain, multi_cell_diversity_gain, other_gains, minimum_signal_strength}* *- Each link budget record in the Mobile Link Budget Parameters file must have a corresponding record for each of the required fields unless the value of the field for that link budget record is null.*
rationale	Text	Typical equipment configuration	Short narrative explaining why a particular value was chosen in the link budget.

3.2.4.6 Mobile Link Budget Description

This file contains a description of how the link budgets were created for each link budget used in creating the availability data in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_link_budget_description_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.

Field	Data Type	Example	Description / Notes
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
explanation	String		Narrative description of how the link budgets (identified in the Mobile Link Budget Parameters file) were created.

3.2.4.7 Mobile Propagation Model Link Budget Association

This file contains records of the propagation model IDs and their associated with link budget IDs, noting that there can be a many-to-many relationship between link budgets and propagation models in Comma Separated Value (CSV) format.

Note: this file will only be included in the supporting data zip file when the selected technology is Mobile Voice or 3G, 4G LTE, or 5G-NR Mobile Broadband.

Files are made available by provider, technology, and data as-of date with the following file naming structure:

- *bdc_us_{Provider ID}_{Technology}_propagation_model_link_budget_association_{Data As-of Date}_{Revision Date}.csv*

Below is the specification for the tabular data in each CSV file available for download:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the entity that submitted the data.
provider_id	Integer	999100	Unique identifier for the service provider.
technology_code	Integer	500	Code for the technology used for the deployed service. *- Value is one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR* *0 – Mobile Voice*
model_id	Text	ITM-1A	Unique identifier of a propagation model used to generate the mobile coverage data and is associated with at least one link budget. *- Value length must be < 256 characters.* *- Value must correspond to a model_id value in the Mobile Propagation Modeling Information file*.

Field	Data Type	Example	Description / Notes
link_budget_id	Text	VA1238DL	Unique identifier of a link budget used to generate the mobile coverage data and is associated with at least one propagation model. *- Value length must be < 256 characters.* *- Value must correspond to a link_budget_id value in the Mobile Link Budget Parameters file.*

4 Challenge Data

Public users of the National Broadband Map can download data on the challenges submitted in response to the Broadband Serviceable Location Fabric (Fabric) data and the fixed broadband availability data published on the map.

These download files are generated as a snapshot of the data on the last day of each month and published on the Data Downloads sections of the National Broadband Map.

4.1 Fabric Challenge Data

4.1.1 In-Progress Fabric Challenges

These CSV data files contain non-sensitive details of all Fabric challenges that are currently in-progress (i.e., challenges that have been accepted for filing but have not yet been adjudicated for acceptance or rejection in the next version of the Fabric).

Files are made available by state in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_in_progress_fabric_challenges_{Data Snapshot Date}.zip*

Specifications for the tabular data in these CSV files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9998374	Unique identifier for the individual challenge record.
fabric_vintage	Date	2022-06-30	Vintage date of Fabric data to which the Fabric challenge submission applies. *- Value matches a valid ISO-8601 date format, including the year, month, and day, e.g.: YYYY-MM-DD.*
category_code	Enumerated Integer	1	Code identifying the category or type of Fabric challenge. *- Value must be one of the following codes:* *1 – Missing Broadband Serviceable Location* *2 – Incorrect Location Address* *3 – Incorrect Location Unit Count* *4 – Incorrect Location Building Type* *5 – Location is Not Within Correct Building Footprint* *6 – Location is Not Broadband Serviceable* *7 – Add Supplemental Address* *8 – Remove Secondary Address*

Field	Data Type	Example	Description / Notes
category_code_ desc	Enumerated String	Missing Broadband Serviceable Location	Description for the category or type of Fabric challenge. *- Value must be one of the following descriptions:* *1 – Missing Broadband Serviceable Location* *2 – Incorrect Location Address* *3 – Incorrect Location Unit Count* *4 – Incorrect Location Building Type* *5 – Location is Not Within Correct Building Footprint* *6 – Location is Not Broadband Serviceable* *7 – Add Supplemental Address* *8 – Remove Secondary Address*
location_id	String {13}	1357135307	Unique identifier for the Fabric location included as part of the challenge submission. *- Value is null if category_code value is 1 or 8.*
location_state	String {2}	CA	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the location_id. *- Value is null if category_code value is 8.*

4.1.2 Resolved Fabric Challenges

These CSV files (by state) contain data on all Fabric challenges that have been fully resolved (i.e., challenges that have been adjudicated for acceptance or rejection in a later version of the Fabric).

Files are made available by state and month in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_resolved_fabric_challenges_{month}_{year}.zip*

Specifications for the tabular data in these CSV files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9998374	Unique identifier for the individual challenge record.
fabric_vintage	Date	2022-06-30	Vintage date of Fabric data to which the fabric challenge submission applies. *- Value matches a valid ISO-8601 date format, including the year, month, and day, e.g.: YYYY-MM-DD.*

Field	Data Type	Example	Description / Notes
category_code	Enumerated Integer	1	Code identifying the category or type of Fabric challenge. *- Value must be one of the following codes:* *1 – Missing Broadband Serviceable Location* *2 – Incorrect Location Address* *3 – Incorrect Location Unit Count* *4 – Incorrect Location Building Type* *5 – Location is Not Within Correct Building Footprint* *6 – Location is Not Broadband Serviceable* *7 – Add Supplemental Address* *8 – Remove Secondary Address*
category_code_ desc	Enumerated String	Missing Broadband Serviceable Location	Description for the category or type of Fabric challenge. *- Value must be one of the following descriptions:* *1 – Missing Broadband Serviceable Location* *2 – Incorrect Location Address* *3 – Incorrect Location Unit Count* *4 – Incorrect Location Building Type* *5 – Location is Not Within Correct Building Footprint* *6 – Location is Not Broadband Serviceable* *7 – Add Supplemental Address* *8 – Remove Secondary Address*
location_id	String {13}	1357135307	Unique identifier for the Fabric location included as part of the challenge submission. *- Value is null if category_code value is 1 or 8.*
location_state	String {2}	CA	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the location_id or the geographic coordinates specified by the challenger when category_code = 1. *- Value is null if category_code value is 8.*
address_ primary	String	45 L ST NE	Primary address information (i.e., first address line) with street number, name, and any applicable suffix. *- Value is null if category_code value is 3, 4, 5, 6, or 8, or if bsl_lacks_address_flag value is 1.*
city	String	WASHINGTON	Full name of the city, town, municipality, or census designated place. *- Value is null if category_code value is 3, 4, 5, 6, or 8.*
state	String {2}	DC	Two-letter USPS abbreviation identifying the state. *- Value is null if category_code value is 3, 4, 5, 6, or 8.*

Field	Data Type	Example	Description / Notes
zip_code	String {5}	20002	Five-digit USPS ZIP code. *- Value must not be null if bsl_lacks_address_flag value is 0.* *- Value is optional and may be null if bsl_lacks_address_flag value is 1.* *- Value is null if category_code value is 3, 4, 5, 6, or 8.*
zip_code_suffix	String {4}		Four-digit USPS ZIP+4 code suffix, if applicable. *- Value is optional and may be null.* *- Value is null if category_code value is 3, 4, 5, 6, or 8.*
unit_count	Integer	6	Count of housing units that share the same broadband serviceable location. *- Value is null if category_code value is 2, 4, 5, 6, 7, or 8.*
building_type_ code	Enumerated String {1}	B	Enumerated character identifying the building type / available service type offered for the location. *- Value must be one of the following codes:* *B – Business-only location* *R – Residential-only location* *X – Business and Residential location* *G – Group Quarters location* *C – Community Anchor Institution* *E – Enterprise location* *- Value is null if category_code value is 2, 3, 5, 6, 7, or 8.*

Field	Data Type	Example	Description / Notes
non_bsl_code	String {1}		Enumerated character identifying the reason why a structure is not considered a Broadband Serviceable Location. *S – Location is a K-12 **school**, junior college, university (a Community Anchor Institution) that does/would not subscribe to a mass market service* *L – Location is a **library** (a Community Anchor Institution) that does/would not subscribe to a mass market service* *G – Location is a **government** building (a Community Anchor Institution) that does/would not subscribe to a mass market service* *H – Location is a **healthcare** building (a Community Anchor Institution) that does/would not subscribe to a mass market service* *F – Location is a public safety location (a Community Anchor Institution like **Fire** or EMS locations) that does/would not subscribe to a mass market service* *E – This is an **enterprise** location that does/would not subscribe to a mass market service* *P – Location lacks any source for electric **power** and should be removed from the Fabric entirely* *N – Location **no longer exists** and should be removed from the Fabric* *R – This is a location that does not require a network connection for another reason and should be removed from the Fabric* *- Value is null if category_code value is 1, 2, 3, 4, 5, 7, or 8.*
bsl_lacks_ address_flag	Boolean Integer	0	Boolean integer flag indicating whether the challenge asserts that the broadband serviceable fabric location lacks any address. *- Value is one of the following codes:* *0 – False* *1 – True* *- Value is null if category_code value is 3, 4, 5, 6, 7, or 8.*
address_id	Integer		Unique ID of the address within the location. *- Value is null if category_code value is 1, 2, 3, 4, 5, 6, or 7.*

Field	Data Type	Example	Description / Notes
latitude	Decimal (10,7)	38.90354356	Unprojected (WGS-84) geographic coordinate latitude in decimal degrees of the broadband serviceable location. *- Value has minimum precision of 6 decimal digits.* *- Value is null if category_code value is 2, 3, 4, 6, 7, or 8.*
longitude	Decimal (10,7)	-77.00717282	Unprojected (WGS-84) geographic coordinate longitude in decimal degrees of the broadband serviceable location. *- Value has minimum precision of 6 decimal digits.* *- Value is null if category_code value is 2, 3, 4, 6, 7, or 8.*
date_received	Date	2023-03-15	Date that the Fabric challenge was accepted for filing in the BDC system.
withdraw_date	Date		Date that the challenger withdrew the Fabric challenge, if applicable.
outcome	Enumerated String	Challenge Upheld	Final status of the Fabric challenge after either challenger withdrawal or FCC adjudication. *- Value is one of the following statuses:* ▪ *Withdrawn* ▪ *Upheld* ▪ *Overturned*
adjudication_date	Date	2023-05-01	Date that the FCC adjudicated the Fabric challenge. *- Value is null if outcome is "Withdrawn".*
adjudication_code	Enumerated Numeric	1.0	A code indicating the reason for Fabric challenge adjudication result. *- Value is null if outcome is "Withdrawn".* *- Value is one of the codes provided in the table in Section 1.1.1.3.*
adjudication_code_desc	Enumerated String	Challenge Accepted	A description of the reason for the Fabric challenge adjudication result. *- Value is null if outcome is "Withdrawn".* *- Value is one of the descriptions provided in the table in Section 1.1.1.3 for the associated adjudication_code value.*
fabric_response_location_id	String {13}	1357138901	Unique identifier for the new broadband serviceable Fabric location resulting from the challenge, if applicable. *- Value is null if outcome value is not "Upheld".*

4.1.3 Fabric Challenge Adjudication Codes

For adjudicated Fabric challenge results, the adjudication_code and adjudication_code_desc fields list the response codes and descriptions, respectively, which indicate why a Fabric challenge was accepted or rejected. The possible adjudication codes and their descriptions are listed in the table below:

Code	Description
1.0	The FCC has accepted the challenge.
1.1	The address provided for the challenge is a duplicate.
1.2	The address provided for the challenge could not be validated using multiple address sources.
1.3	BSL confirmed: The geographic coordinates for the challenge intersect with the footprint of an existing BSL.
1.4	The challenge attempts to add another BSL within an "entity" boundary (e.g., college, military installation, prison), inconsistent with the FCC definition of a BSL.
1.5	The challenge did not pass the manual review process required for this location.
1.6	The challenge duplicated a previously accepted challenge.
1.7	The challenge attempted to add another BSL to a single-location parcel inconsistent with the FCC definition of a BSL.
1.8	The geographic coordinates provided with the challenge are not on or near a structure or are on or very close to a road.
1.9	The challenge duplicates the lat-lon coordinates from another challenge.
1.11	The challenge duplicates the primary address from another challenge.
1.12	The challenge did not pass the manual review process required for this location.
1.21	The challenge was withdrawn.
1.22	The challenge was rejected per staff adjudication.
1.23	BSL confirmed: The challenge was overtaken by new data as reflected in updated Fabric.
1.24	The challenge was not accepted because at least 80% of all challenges for this FRN in this round did not pass the automated Fabric checks.
1.25	The challenge was not accepted because a large number of challenges from a random sample of all challenges requiring manual review for this FRN in this round did not pass manual review.
2.0	The FCC has accepted the challenge.
2.1	The address provided for the challenge is a duplicate of an address included in the Fabric data, including secondary addresses.
2.2	The address provided for the challenge could not be validated using multiple address sources.
2.5	The challenge failed following manual review.
2.6	The challenge duplicated a previously accepted challenge.
2.21	The challenge was withdrawn.
2.22	The challenge was rejected per staff adjudication.

Code	Description
2.23	The challenge was overtaken by new data as reflected in updated Fabric.
3.0	The FCC has accepted the challenge.
3.1	The challenge impermissibly attempted to change the unit count for a non-BSL or location within an "entity" boundary (e.g., college, military installation, prison).
3.2	The unit count provided for the challenged location exceeds expectations.
3.3	The FCC has accepted the challenge but capped the unit count increase at "5."
3.5	The challenge failed following manual review.
3.6	The challenge duplicated a previously accepted challenge.
3.21	The challenge was withdrawn.
3.22	The challenge was rejected per staff adjudication.
3.23	The challenge was overtaken by new data as reflected in updated Fabric.
4.0	The FCC has accepted the challenge.
4.1	The challenge impermissibly attempted to change the building type code for a location within an "entity" boundary (e.g., college, military installation, prison).
4.5	The challenge failed following manual review.
4.6	The challenge duplicated a previously accepted challenge.
4.21	The challenge was withdrawn.
4.22	The challenge was rejected per staff adjudication.
4.23	The challenge was overtaken by new data as reflected in updated Fabric.
5.0	The FCC has accepted the challenge.
5.1	The challenge impermissibly attempted to change the geographic coordinates for a location within an "entity" boundary (e.g., college, military installation, prison).
5.2	The challenge impermissibly attempted to move the challenged location outside of the parcel boundaries for the Fabric record.
5.3	The challenge impermissibly attempted to move the challenged location to an existing Fabric record.
5.5	The challenge failed following manual review.
5.6	The challenge duplicated a previously accepted challenge.
5.21	The challenge was withdrawn.
5.22	The challenge was rejected per staff adjudication.
5.23	The challenge was overtaken by new data as reflected in updated Fabric.
6.0	The FCC has accepted the challenge.
6.1	The challenge impermissibly attempted to updates the status of a location within an "entity" boundary (e.g., college, military installation, prison).
6.2	Rejected due to filer's prior challenge to add the location being accepted.
6.5	The challenge did not pass the manual review process.

Code	Description
6.6	The challenge duplicated a previously accepted challenge.
6.7	The challenge did not pass the manual review process.
6.21	The challenge was withdrawn.
6.22	The challenge was rejected per staff adjudication.
6.23	The challenge was overtaken by new data as reflected in updated Fabric.
6.24	The challenge was not accepted because at least 80% of all challenges for this FRN in this round did not pass the automated Fabric checks.
6.25	The challenge was not accepted because a large number of challenges from a random sample of all challenges requiring manual review for this FRN in this round did not pass manual review.
7.0	The FCC has accepted the challenge.
7.1	The address provided for the challenge is a duplicate of an address included in the Fabric data, including secondary addresses.
7.2	The address provided for the challenge could not be validated using multiple address sources.
7.5	The challenge did not pass the manual review process.
7.6	The challenge duplicated a previously accepted challenge.
7.21	The challenge was withdrawn.
7.22	The challenge was rejected per staff adjudication.
7.23	The challenge was overtaken by new data as reflected in updated Fabric.
8.0	The FCC has accepted the challenge.
8.21	The challenge was withdrawn.
8.22	The challenge was rejected per staff adjudication.
8.23	The challenge was overtaken by new data as reflected in updated Fabric.

4.2 Fixed Challenge Data

4.2.1 In-Progress Fixed Challenges

These CSV files (by state) lists the fixed availability challenges that are currently in-progress. These are challenges that have been accepted for filing but have not been either (a) withdrawn or deleted by the challenger or (b) certified by the provider to update or remove the location in response to the challenge being conceded or upheld in an adjudication.

Files are made available by state in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_in_progress_fixed_challenges_{Data Snapshot Date}.zip*

Specifications for the data attributes for these CSV data files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9998374	Unique identifier for the individual challenge record.

Field	Data Type	Example	Description / Notes
location_id	Integer	1357135307	Unique identifier for the broadband serviceable fabric location included as part of the challenge submission.
location_state	String {2}	CA	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the location_id.
data_vintage	Date	2022-06-30	Vintage date of the fixed broadband data subject to challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD* *- Value corresponds to an as-of date of published fixed broadband availability data.*
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the service provider entity whose fixed broadband availability data are subject to challenge.
provider_id	Integer	999100	Unique identifier for the service provider.
provider_ brand_name	String	Acme Broadband, LLC	Name of the service provider as it appears in the BDC system.
holding_company_ name	String	Acme Broadband Company, Inc.	Normalized name of the holding company or entity that commonly controls the service provider.
technology	Enumerated Integer	50	Code for the technology used for the service subject to fixed broadband availability challenge. *- Value is one of the following codes:* *10 – Copper Wire* *40 – Coaxial Cable / HFC* *50 – Optical Carrier / Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*

Field	Data Type	Example	Description / Notes
category_code	Enumerated Integer	1	Code identifying the category of the fixed broadband availability challenge. *- Value is one of the following codes:* *1 – Provider failed to schedule a service installation within 10 business days of request* *2 – Provider did not install the service at the agreed-upon time* *3 – Provider requested more than the standard installation fee to connect service* *4 – Provider denied a request for service* *5 – Provider does not offer the technology reported to be available at this location* *6 – Provider does not offer the speed(s) reported to be available at this location* *8 – A wireless or satellite signal is not available at this location* *9 – Provider needed to construct new equipment at this location* *- Value may not be 8 or 9 unless technology value is 60, 61, 70, 71, or 72.*
category_code_ desc	Enumerated String	Provider failed to schedule a service installation within 10 business days of request	Description for the category of the fixed broadband availability challenge. *- Value is one of the following descriptions:* *1 – Provider failed to schedule a service installation within 10 business days of request* *2 – Provider did not install the service at the agreed-upon time* *3 – Provider requested more than the standard installation fee to connect service* *4 – Provider denied a request for service* *5 – Provider does not offer the technology reported to be available at this location* *6 – Provider does not offer the speed(s) reported to be available at this location* *8 – A wireless or satellite signal is not available at this location* *9 – Provider needed to construct new equipment at this location* *- Value may not be 8 or 9 unless technology value is 60, 61, 70, 71, or 72.*
request_date	Date	2022-09-01	Date of the service request associated with the challenge. *- Value is null if category_code value is 5 or 6.*

4.2.2 Resolved Fixed Challenges

This CSV file contains data on all fixed challenges that were accepted for filing by the FCC and have been fully resolved (i.e., the challenge was withdrawn, or the provider has certified revised data as a result of conceding or losing the challenge). The file does not contain data on challenges that were deleted by the challenger.

Files are made available by state and month in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_resolved_fixed_challenges_{Snapshot month}_{Snapshot year}.zip*

Specifications for the data attributes for these CSV data files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9998374	Unique identifier for the individual challenge record.
location_id	Integer	1357135307	Unique identifier for the broadband serviceable fabric location included as part of the challenge submission.
location_state	String {2}	CA	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the location_id.
data_vintage	Date	2022-06-30	Vintage date of the fixed broadband data subject to challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD* *- Value corresponds to an as-of date of published fixed broadband availability data.*
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the service provider entity whose fixed broadband availability data are subject to challenge.
provider_id	Integer	999100	Unique identifier for the service provider.
provider_ brand_name	String	Acme Broadband, LLC	Name of the service provider as it appears in the BDC system.
holding_company_ name	String	Acme Broadband Company, Inc.	Normalized name of the holding company or entity that commonly controls the service provider.

Field	Data Type	Example	Description / Notes
technology	Enumerated Integer	50	Code for the technology used for the service subject to the fixed broadband availability challenge. *- Value is one of the following codes:* *10 – Copper Wire* *40 – Coaxial Cable / HFC* *50 – Optical Carrier / Fiber to the Premises* *60 – Geostationary Satellite* *61 – Non-geostationary Satellite* *70 – Unlicensed Fixed Wireless* *71 – Licensed Fixed Wireless* *72 – Licensed-by-Rule Fixed Wireless* *0 – Other*
category_code	Enumerated Integer	1	Code identifying the category of the fixed broadband availability challenge. *- Value is one of the following codes:* *1 – Provider failed to schedule a service installation within 10 business days of request* *2 – Provider did not install the service at the agreed-upon time* *3 – Provider requested more than the standard installation fee to connect service* *4 – Provider denied a request for service* *5 – Provider does not offer the technology reported to be available at this location* *6 – Provider does not offer the speed(s) reported to be available at this location* *8 – A wireless or satellite signal is not available at this location* *9 – Provider needed to construct new equipment at this location* *- Value may not be 8 or 9 unless technology value is 60, 61, 70, 71, or 72.*

Field	Data Type	Example	Description / Notes
category_code_ desc	Enumerated String	Provider failed to schedule a service installation within 10 business days of request	Description for the category of the fixed broadband availability challenge. *- Value is one of the following descriptions:* *1 – Provider failed to schedule a service installation within 10 business days of request* *2 – Provider did not install the service at the agreed-upon time* *3 – Provider requested more than the standard installation fee to connect service* *4 – Provider denied a request for service* *5 – Provider does not offer the technology reported to be available at this location* *6 – Provider does not offer the speed(s) reported to be available at this location* *8 – A wireless or satellite signal is not available at this location* *9 – Provider needed to construct new equipment at this location* *- Value may not be 8 or 9 unless technology value is 60, 61, 70, 71, or 72.*
request_date	Date	2022-09-01	Date of the service request associated with the challenge. *- Value is null if category_code value is 5 or 6.*
date_received	Date	2023-01-13	Date that the fixed broadband availability challenge was accepted for filing in the BDC system.
withdraw_date	Date		Date that the challenger withdrew the fixed broadband availability challenge, if applicable. *- Value is null if outcome is not "Challenge Withdrawn".*
outcome	Enumerated String	Challenge Upheld - Service Change	Final status of the fixed broadband availability challenge after either a provider concession, challenger withdrawal, or FCC adjudication. *- Value is one of the following statuses:* ▪ *Challenge Upheld - Provider Conceded* ▪ *Challenge Upheld - Service Change* ▪ *Challenge Withdrawn* ▪ *Challenge Upheld - Adjudicated by FCC* ▪ *Challenge Overturned*

Field	Data Type	Example	Description / Notes
adjudication_date	Date		Date that the FCC adjudicated the fixed broadband availability challenge, if applicable. *- Value is null if outcome is "Challenge Upheld - Provider Conceded", "Challenge Upheld - Service Change", or "Challenge Withdrawn".*

Field	Data Type	Example	Description / Notes
adjudication_code	Enumerated Integer		Code identifying the adjudication category of the fixed broadband availability challenge as adjudicated by the FCC. *- Value is one of the following codes:* *1 – The evidence submitted is insufficient to establish availability of the reported service at the challenged location.* *2 – The evidence submitted is insufficient to establish that the reported speed or technology is offered at the challenged location.* *3 – The submitted evidence establishes that service is unavailable at the challenged location because service is conditioned on a non-standard installation fee, right-of-entry to the property, or other condition that prevents a standard installation within ten business days.* *4 – The submitted evidence establishes that the network is at capacity and the reported service is unavailable to new customers or that customers are waitlisted for service. The evidence therefore does not demonstrate that the provider can install the reported service within ten business days. As a result, the reported service is unavailable at the challenged location.* *5 – Provider's evidence is sufficient to rebut the underlying challenge and establish that the service is available as reported by the provider at the challenged location.* *6 – Provider asserted challenger concurred with its resolution of the challenge and challenger did not dispute this assertion.* *99 – Other* *- Value is null if outcome is "Challenge Upheld - Provider Conceded", "Challenge Upheld - Service Change", or "Challenge Withdrawn".*

Field	Data Type	Example	Description / Notes
adjudication_code_ desc	Enumerated String		Description of the methodology of the service request associated with the challenge. *- Value is one of the following descriptions:* *1 – The evidence submitted is insufficient to establish availability of the reported service at the challenged location.* *2 – The evidence submitted is insufficient to establish that the reported speed or technology is offered at the challenged location.* *3 – The submitted evidence establishes that service is unavailable at the challenged location because service is conditioned on a non-standard installation fee, right-of-entry to the property, or other condition that prevents a standard installation within ten business days.* *4 – The submitted evidence establishes that the network is at capacity and the reported service is unavailable to new customers or that customers are waitlisted for service. The evidence therefore does not demonstrate that the provider can install the reported service within ten business days. As a result, the reported service is unavailable at the challenged location.* *5 – Provider's evidence is sufficient to rebut the underlying challenge and establish that the service is available as reported by the provider at the challenged location.* *6 – Provider asserted challenger concurred with its resolution of the challenge and challenger did not dispute this assertion.* *99 – Other* *- Value is null if outcome is "Challenge Upheld - Provider Conceded", "Challenge Upheld - Service Change", or "Challenge Withdrawn".*

4.2.3 Cumulative Count of Fixed Challenges

These CSV files contain data on the cumulative counts of all fixed challenges to each provider that were accepted for filing and were not deleted by the challenger. The challenge counts are broken out by status / phase within the fixed broadband availability challenge process.

Files are made available by state in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_cumulative_count_of_fixed_challenges_{Data Snapshot Date}.zip*

Specifications for the data attributes for these CSV data files are provided in the table below:

Field	Data Type	Example	Description / Notes
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the service provider entity whose fixed broadband availability data are subject to challenge.
provider_id	Integer	999100	Unique identifier for the service provider.
entity_name	String	Acme Broadband, LLC	Name of the service provider as it appears in the BDC system and in CORES.
holding_company_name	String	Acme Broadband Company, Inc.	Normalized name of the holding company or entity that commonly controls the service provider.
challenges_in_process	Integer	1109	Count of challenges submitted against the provider that have been accepted for filing that remain in an in-process status (i.e., not withdrawn, not conceded, and not adjudicated).
challenges_withdrawn	Integer	412	Count of challenges submitted against the provider that have been accepted for filing and then subsequently withdrawn by the challenger (i.e., where the outcome is "Challenge Withdrawn").
challenges_upheld_provider_conceded	Integer	90	Count of challenges submitted against the provider that have been accepted for filing and then subsequently conceded by the provider for reasons other than a service change (i.e., where the outcome is "Challenge Upheld - Provider Conceded").
challenges_upheld_service_change	Integer	877	Count of challenges submitted against the provider that have been accepted for filing and then subsequently conceded by the provider due to a service change (i.e., where the outcome is "Challenge Upheld - Service Change").
challenges_upheld_fcc_adjudicated	Integer	365	Count of challenges submitted against the provider that have been accepted for filing, disputed by the provider, and then subsequently upheld by an FCC adjudicator (i.e., adjudicated in favor of the challenger and where the outcome is "Challenge Upheld - Adjudicated by FCC").

Field	Data Type	Example	Description / Notes
challenges_ overturned	Integer	883	Count of challenges submitted against the provider that have been accepted for filing, disputed by the provider, and then subsequently overturned by an adjudicator (i.e., adjudicated in favor of the provider and where the outcome is "Challenge Overturned").
challenges_ total	Integer	3736	Count of all challenges submitted against the provider that have been accepted for filing, regardless of status.

4.3 Mobile Challenge Data

4.3.1 In-Progress Mobile Challenges

These files include data about the mobile availability challenges in a selected state that are currently in-progress. Each record identifies the hexagonal area where a cognizable mobile challenge has been created, based on submitted mobile speed test data, but has not yet been resolved. A challenge is considered resolved when the provider has certified to the removal of the challenged area from its availability data in response to either (a) conceding the challenge or (b) the challenge being upheld in an adjudication by the FCC.

Files are made available by state in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_in_progress_mobile_challenges_{Data Snapshot Date}.zip*

Specifications for the data attributes for these CSV files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9991001	Unique identifier for the individual challenge record.
challenge_date	Date	2023-03-31	As-of date through which mobile speed test data were considered to create the mobile challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD*
h3_resolution	Enumerated Integer	8	Resolution of the H3 hexagon cell for which the provider was challenged. *- Value is one of the following resolutions:* ▪ *6* ▪ *7* ▪ *8*
h3_cell_id	String	882aa8458dfffff	Unique identifier for the H3 hexagonal cell for which the provider was challenged. *- More details about the H3 geospatial indexing system can be found at https://h3geo.org/*

Field	Data Type	Example	Description / Notes
h3_cell_state	String {2}	DC	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the h3_cell_id.
data_vintage	Date	2022-06-30	Vintage date of the mobile broadband availability data subject to challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD* *- Value corresponds to an as-of date of published fixed broadband availability data.*
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the service provider entity whose fixed broadband availability data are subject to challenge.
provider_id	Integer	999100	Unique identifier for the service provider.
provider_ brand_name	String	Acme Broadband, LLC	Name of the service provider as it appears in the BDC system.
holding_company_ name	String	Acme Broadband Company, Inc.	Normalized name of the holding company or entity that commonly controls the service provider.
technology	Enumerated Integer	500	Code for the technology with which the provider originally reported to provide service in the challenged area. *- Value must be one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*
minimum_ download_speed	Numeric	7.0	Minimum download speed (in Mbps) at which the provider originally reported to provide service in the challenged area. *- Value is 0.2 when technology value is 300 (i.e., 3G), is 5.0 when technology value is 400 (i.e., 4G LTE), and is either 7.0 or 35.0 when technology value is 500 (i.e., 5G-NR).*
minimum_ upload_speed	Numeric	1.0	Minimum upload speed (in Mbps) associated with the minimum download speed at which the provider originally reported to provide service in the challenged area. *- Value is 0.05 when technology value is 300 (i.e., 3G), is 1.0 when technology value is 400 (i.e., 4G LTE), and is either 1.0 or 3.0 when technology value is 500 (i.e., 5G-NR).*

Field	Data Type	Example	Description / Notes
challenge_type	String	In-vehicle Mobile	Indicator of whether the challenge is to the provider's outdoor stationary or in-vehicle mobile coverage. *- Value is one of the following:* ▪ *Outdoor Stationary* ▪ *In-vehicle Mobile*

4.3.2 Resolved Mobile Challenges

These files contain data about the cognizable mobile challenges in a selected state that have been fully resolved (i.e., the provider has certified to removal of the area as a result of conceding or losing the challenge).

Files are made available by state and month in a zip archive with the following file naming structure:

- *bdc_{State FIPS}_resolved_mobile_challenges_{Snapshot month}_{Snapshot year}.zip*

Specifications for the data attributes for these CSV files are provided in the table below:

Field	Data Type	Example	Description / Notes
challenge_id	Integer	9991001	Unique identifier for the individual challenge record.
challenge_date	Date	2023-03-31	As-of date through which mobile speed test data were considered to create the mobile challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD*
h3_resolution	Enumerated Integer	8	Resolution of the H3 hexagon cell for which the provider was challenged. *- Value is one of the following resolutions:* ▪ *6* ▪ *7* ▪ *8*
h3_cell_id	String	882aa8458dfffff	Unique identifier for the H3 hexagonal cell for which the provider was challenged. *- More details about the H3 geospatial indexing system can be found at https://h3geo.org/*
h3_cell_state	String {2}	DC	The two-letter USPS abbreviation identifying the U.S. state or territory associated with the h3_cell_id.

Field	Data Type	Example	Description / Notes
data_vintage	Date	2022-06-30	Vintage date of the mobile broadband availability data subject to challenge. *- Value matches valid ISO-8601 date format, e.g.: YYYY-MM-DD* *- Value corresponds to an as-of date of published fixed broadband availability data.*
frn	String {10}	0032176356	10-digit FCC Registration Number (FRN) of the service provider entity whose fixed broadband availability data are subject to challenge.
provider_id	Integer	999100	Unique identifier for the service provider.
provider_ brand_name	String	Acme Broadband, LLC	Name of the service provider as it appears in the BDC system.
holding_company_ name	String	Acme Broadband Company, Inc.	Normalized name of the holding company or entity that commonly controls the service provider.
technology	Enumerated Integer	500	Code for the technology with which the provider originally reported to provide service in the challenged area. *- Value must be one of the following codes:* *300 – 3G* *400 – 4G LTE* *500 – 5G-NR*
minimum_ download_speed	Numeric	7.0	Minimum download speed (in Mbps) at which the provider originally reported to provide service in the challenged area. *- Value is 0.2 when technology value is 300 (i.e., 3G), is 5.0 when technology value is 400 (i.e., 4G LTE), and is either 7.0 or 35.0 when technology value is 500 (i.e., 5G-NR).*
minimum_ upload_speed	Numeric	1.0	Minimum upload speed (in Mbps) associated with the minimum download speed at which the provider originally reported to provide service in the challenged area. *- Value is 0.05 when technology value is 300 (i.e., 3G), is 1.0 when technology value is 400 (i.e., 4G LTE), and is either 1.0 or 3.0 when technology value is 500 (i.e., 5G-NR).*
challenge_type	String	In-vehicle Mobile	Indicator of whether the challenge is to the provider's outdoor stationary or in-vehicle mobile coverage. *- Value is one of the following types:* ▪ *Outdoor Stationary* ▪ *In-vehicle Mobile*

Field	Data Type	Example	Description / Notes
outcome	Enumerated String	Challenge Upheld - Provider Conceded	Final status of the mobile broadband availability challenge after either a provider concession or FCC adjudication. *- Value is one of the following statuses:* ▪ *Challenge Upheld - Provider Conceded* ▪ *Challenge Upheld - Adjudicated by FCC* ▪ *Challenge Overturned*
adjudication_date	Date		Date that the FCC adjudicated the mobile broadband availability challenge, if applicable. *- Value is null if outcome is "Challenge Upheld - Provider Conceded".*