

Attachment A

Format of Data

All data should be submitted in a .csv (comma-delimited) format. The sheets in the workbook provide a template for how the tables should be designed.

The required format for the entries in each column/field is indicated in the instructions for each sheet.

All entries in Text fields must be in quotation marks (e.g. "AT&T", "Verizon Wireless", "US Cellular").

Column entries in **bold red** indicate that the party shall enter only one of the possible entries listed for that column. No other entries shall be entered.

Data for all of the tables shall be submitted on a periodic basis as specified in the instructions in individual tables.

In a separate written response, explain in detail the applicable methodology and assumptions used to derive all projections in response to this data request.

"Offered Capacity" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide at the level of technology/spectrum band the following offered capacity data at the county level, and for the United States, including the Commonwealth of Puerto Rico.

Column A:

Date

Description: The month for which the offered capacity data is being collected or projected.
as of the second week of the month.
Format of Field: Text - YYYY_MM
Possible Entries: 2015_03 2018_12
2015_06 2019_12
2015_09 2020_12
2015_12 2021_12
2016_03 2022_12
2016_06 2023_12
2016_09 2024_12
2016_12 2021_12
2017_03 2022_12
2017_06 2023_12
2017_09 2024_12
2017_12
2018_03
2018_06

Column B:

Operator

Description: The operator of the site to which this data record applies.
Format of Field: Text
Possible Entries: "The Company DBA Name"

Column C:

County FIPS

Description: This field is the 2010 five-digit FIPS code of the county in which the site is located.
Please provide data for counties and county-equivalents in the United States and Commonwealth of Puerto Rico.
Format of Field: Text
Example Entries: "01001", "51059", etc.

Column D:

CMA

Description: This field represents the standard market number of the CMA in which the site is located.
Please provide data for CMAs in the United States and Commonwealth of Puerto Rico.
Format of Field: Number - Integer
Possible Entries: Integers 1 - 729

"Offered Capacity" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide at the level of technology/spectrum band the following offered capacity data at the county level, and for the United States, including the Commonwealth of Puerto Rico.

Column E: **Technology**

<i>Description:</i>	This field indicates the technology standard used by the channel/carrier described in this record.	
<i>Format of Field:</i>	Text	
<i>Possible Entries:</i>	"1X"	A carrier/channel that supports 1X CDMA
	"EVDO"	A carrier/channel that supports EVDO
	"GSM"	A carrier/channel that supports GSM
	"HSPA"	A carrier/channel that supports HSPA or HSPA+
	"LTE-R8"	A LTE carrier conforming to 3GPP Release 8
	"LTE-R10"	A LTE carrier conforming to 3GPP Release 10
	"LTE-R12"	A LTE carrier conforming to 3GPP Release 12
	"LTE-R13"	A LTE carrier conforming to 3GPP Release 13
	"LTE-LAA"	A LTE Licensed Assisted Access supplemental downlink carrier
	"5G-R15"	A 5G-NR carrier conforming to 3GPP Release 15
	"5G-R16"	A 5G-NR carrier conforming to 3GPP Release 16
	"5G-R17"	A 5G-NR carrier conforming to 3GPP Release 17
	"Fixed-Wireless"	A carrier used for fixed wireless deployment
	"NB-IoT"	Narrowband IoT
	"List Other"	Specify a technology that does not conform to one of the technologies listed above

Column F: **Spectrum Band**

<i>Description:</i>	The frequency band in which the channel/carrier in this data record operates.	
<i>Format of Field:</i>	Text	
<i>Possible Entries:</i>	"600 MHz"	The 600 MHz band
	"700 MHz"	The 700 MHz band
	"800 MHz"	The 800 MHz band
	"PCS"	The PCS band
	"AWS"	The AWS band
	"WCS"	Wireless Communications Service band
	"BRS"	The BRS band
	"EBS"	The EBS band
	"mmWave"	The 24, 28, 39, and 47 GHz mmWave bands
	"Unlicensed"	Unlicensed bands (e.g. 2.4 GHz, 5 GHz, ...)
	"List Other"	Specify a band that does not conform to one of the bands listed above

"Offered Capacity" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide at the level of technology/spectrum band the following offered capacity data at the county level, and for the United States, including the Commonwealth of Puerto Rico.

Column G:	DL+UL Bandwidth (MHz)	<p><i>Description:</i> This field contains the downlink and uplink combined bandwidth (MHz) in operation for the spectrum band</p> <p><i>Format of Field:</i> Number</p> <p><i>Example Entries:</i> 10 Carrier = LTE 20 Carrier = LTE</p>
Column H:	BBH DL Offered Capacity (Gbytes/Hr)	<p><i>Description:</i> Collected or projected base station to mobile offered traffic (data+voice) in Gbytes during the bouncing busy hour (BBH) for the combine The BBH traffic should be the five-day (weekday) average. For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs</p> <p><i>Format of Field:</i> Number</p> <p><i>Example Entries:</i> 75 Gbytes/Hr</p>
Column I:	BBH UL Offered Capacity (Gbytes/Hr)	<p><i>Description:</i> Collected or projected mobile to base station offered traffic (data+voice) in Gbytes during the bouncing busy hour (BBH) for the combine The BBH traffic should be the five-day (weekday) average. For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs</p> <p><i>Format of Field:</i> Number</p> <p><i>Example Entries:</i> 20 Gbytes/Hr</p>
Column J:	Latency (ms.)	<p><i>Description:</i> Collected or projected network latency (round-trip) in milliseconds</p> <p><i>Format of Field:</i> Number</p> <p><i>Example Entries:</i> 70 ms.</p>

Date	Operator	County	CMA	Technology	Spectrum Band	DL+UL Bandwidth (MHz)	BBH DL Offered Capacity (Gbytes/Hr)	BBH UL Offered Capacity (Gbytes/Hr)	Latency (ms.)

"Traffic Demand" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide for each county in the United States and the Commonwealth of Puerto Rico and each technology the following traffic data.

Column A:

Date

Description: The month for which the traffic demand or carried traffic is being projected.
as of the second week of the month.

Format of Field: Text - YYYY_MM

Possible Entries: 2015_03 2018_12
2015_06 2019_12
2015_09 2020_12
2015_12 2021_12
2016_03 2022_12
2016_06 2023_12
2016_09 2024_12
2016_12 2021_12
2017_03 2022_12
2017_06 2023_12
2017_09 2024_12
2017_12
2018_03
2018_06

Column B:

Operator

Description: The operator of the site to which this data record applies.

Format of Field: Text

Possible Entries: "The Company DBA Name"

Column C:

County FIPS

Description: This field is the 2010 five-digit FIPS code of the county in which the site is located.
Please provide data for counties and county-equivalents in the United States and Commonwealth of Puerto Rico.

Format of Field: Text

Example Entries: "01001", "51059", etc.

"Traffic Demand" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide for each county in the United States and the Commonwealth of Puerto Rico and each technology the following traffic data.

Column D: **CMA**

Description: This field represents the standard market number of the CMA in which the site is located. Please provide data for CMAs in the United States and Commonwealth of Puerto Rico.
Format of Field: Number - Integer
Possible Entries: **Integers 1 - 729**

Column E: **Technology**

Description: This field indicates the technology standard of this record.
Format of Field: Text
Possible Entries: **"1X"** A carrier/channel that supports 1X CDMA
"EVDO" A carrier/channel that supports EVDO
"GSM" A carrier/channel that supports GSM
"HSPA" A carrier/channel that supports HSPA or HSPA+
"LTE-R8" A LTE carrier conforming to 3GPP Release 8
"LTE-R10" A LTE carrier conforming to 3GPP Release 10
"LTE-R12" A LTE carrier conforming to 3GPP Release 12
"LTE-R13" A LTE carrier conforming to 3GPP Release 13
"LTE-LAA" A LTE Licensed Assisted Access supplemental downlink carrier
"5G-R15" A 5G-NR carrier conforming to 3GPP Release 15
"5G-R16" A 5G-NR carrier conforming to 3GPP Release 16
"5G-R17" A 5G-NR carrier conforming to 3GPP Release 17
"Fixed-Wireless" A carrier used for fixed wireless deployment
"NB-IoT" Narrowband IoT
"List Other" Specify a technology that does not conform to one of the technologies listed above

Column F: **Subscribers**

Description: The number of subscribers with the technology standard in the county
Format of Field: Number
Example Entries: 22,000

Column G: **BBH DL Traffic Demand (Gbytes/Hr)**

Description: Collected or projected base station to mobile traffic (data+voice) demand in Gbytes/Hr during the bouncing busy hour (BBH) for the county and technology. The BBH traffic should be the five-day (weekday) average. For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs
Format of Field: Number
Example Entries: 15,000 Gbytes/Hr

Column H: **BBH UL Traffic Demand (Gbytes/Hr)**

Description: Collected or projected mobile to base station traffic (data+voice) demand in Gbytes/Hr during the bouncing busy hour (BBH) for the county and technology. The BBH traffic should be the five-day (weekday) average. For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs
Format of Field: Number
Example Entries: 3,000 Gbytes/Hr

"Traffic Demand" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide for each county in the United States and the Commonwealth of Puerto Rico and each technology the following traffic data.

Column I:	BBH DL Speed (Mbps)	<i>Description:</i> Average user download speed (Mbps) during the bouncing busy hour (BBH) for the county and technology The BBH traffic should be the five-day (weekday) average. <i>Format of Field:</i> Number <i>Example Entries:</i> 5 Mbps
Column J:	BBH UL Speed (Mbps)	<i>Description:</i> Average user upload speed (Mbps) during the bouncing busy hour (BBH) for the county and technology The BBH traffic should be the five-day (weekday) average. <i>Format of Field:</i> Number <i>Example Entries:</i> 1 Mbps
Column K:	BBH Latency (Ms)	<i>Description:</i> Average latency (round-trip) in milliseconds during the bouncing busy hour (BBH) for the county and technology The BBH traffic should be the five-day (weekday) average. <i>Format of Field:</i> Number <i>Example Entries:</i> 80 ms.
Column L:	Avg DL Traffic Demand (Gbytes/Hr)	<i>Description:</i> Collected or projected average base station to mobile traffic (data+voice) demand in Gbytes/Hr over the course of a 24-hour day, as a montly average, including weekends, for the county and technology For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs <i>Format of Field:</i> Number <i>Example Entries:</i> 5,000 Gbytes/Hr
Column M:	Avg UL Traffic Demand (Gbytes/Hr)	<i>Description:</i> Collected or projected average mobile to base station traffic (data+voice) demand in Gbytes/Hr over the course of a 24-hour day, as a montly average, including weekends, for the county and technology For predominantly voice technologies such as GSM and 1X CDMA, the traffic unit shall be in Erlangs <i>Format of Field:</i> Number <i>Example Entries:</i> 1,000 Gbytes/Hr

"Traffic Demand" Table

For each quarter beginning 2015_Q1 and extending through 2018_Q2, and for each year thereafter extending to 2024, please provide for each county in the United States and the Commonwealth of Puerto Rico and each technology the following traffic data.

Column N:	Avg DL Speed (Mbps)	<i>Description:</i> Average user download speed (Mbps) over the course of a 24-hour day as a montly average, including weekends, for the county and technology <i>Format of Field:</i> Number <i>Example Entries:</i> 22 Mbps
Column O:	Avg UL Speed (Mbps)	<i>Description:</i> Average user upload speed (Mbps) over the course of a 24-hour day as a montly average, including weekends, for the county and technology <i>Format of Field:</i> Number <i>Example Entries:</i> 6 Mbps
Column P:	Avg Latency (Ms)	<i>Description:</i> Average user latency (round-trip) in milliseconds over the course of a 24-hour day as a montly average, including weekends, for the county and technology. <i>Format of Field:</i> Number <i>Example Entries:</i> 70 ms.
Column Q:	Data Blocking Rate (%)	<i>Description:</i> The percentage of data requests that were blocked or failed to connect as a montly average, including weekends, for the county and technology <i>Format of Field:</i> Number - at least 4 decimal points <i>Example Entries:</i> 0.0179
Column R:	Dropped Calls Rate (%)	<i>Description:</i> The percentage of calls that were dropped as a montly average, including weekends, for the county and technology <i>Format of Field:</i> Number - at least 4 decimal points <i>Example Entries:</i> 0.0024
Column S:	Blocked Call Rate (%)	<i>Description:</i> The percentage of call requests that were blocked or failed to connect as a montly average, including weekends, for the county and technology <i>Format of Field:</i> Number - at least 4 decimal points <i>Example Entries:</i> 0.0024

