Connect America Fund:

Performance Measures Testing and New Sample Generation

December 6, 2022

Universal Service
Administrative Co.

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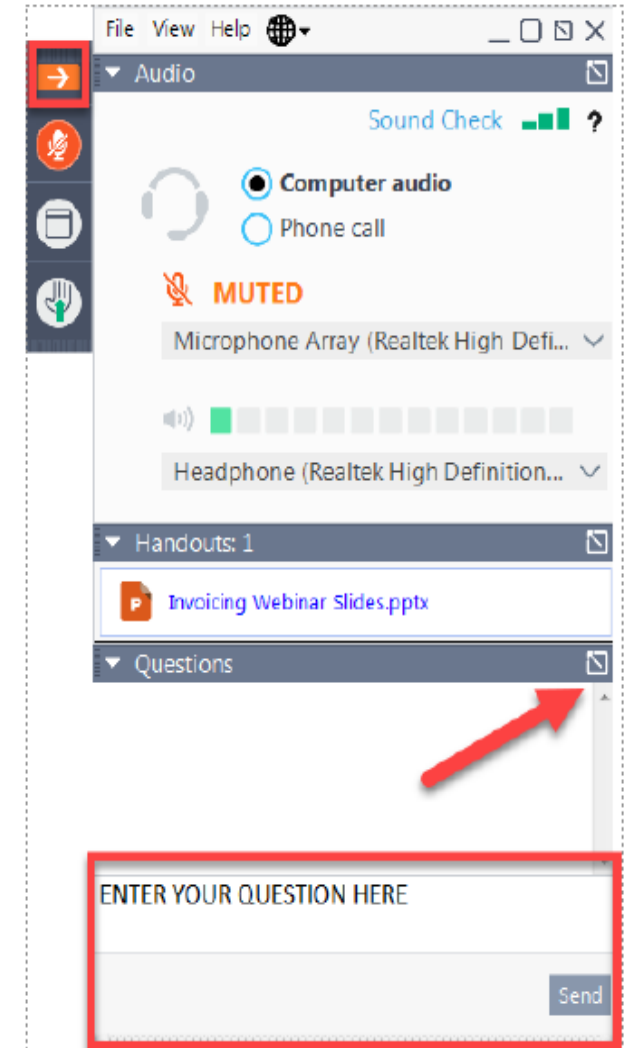
Today's Speakers

- **John Putman**
  Communications Specialist | High Cost

- **Dori Evans**
  Senior Product Manager| High Cost

Connect America Fund:

Performance Measures Testing and New Sample Generation

High Cost and the Connect America Fund (CAF)

The High Cost program ensures universal availability of essential telecommunications services in rural America

- **Legacy Voice Funds**
  - Subsidize voice service to provide universal access to basic phone service
  - Calculate support based on carrier costs
  - Provide support to traditional rural telephone companies
  - Are subject to USAC audit process

- **Modernized Broadband Funds (Connect America Fund)**
  - Subsidize broadband to support advanced communications networks and high-speed Internet access
  - Rely on forward-looking cost models and competitive bidding to give carriers a set amount of support to deploy broadband at certain speeds over a clear timeline—with interim and final deployment milestone deadlines—to a defined number of locations in rural communities
  - Provide support to not only traditional rural phone companies, but also rural electric cooperatives, cable operators, wireless operators, wireless Internet service providers and satellite providers
  - Are subject to compliance framework to ensure required deployment

Connect America Fund Compliance

USAC closely monitors carrier compliance with broadband deployment obligations to ensure that carriers are using CAF support to build out high-speed Internet access that meets minimum speed and latency standards to required location counts by relevant deployment milestone deadlines in rural areas eligible for funding.

Compliance process consists of three steps:

HUBB Portal: Tracking Broadband Deployment

Verification Reviews: Confirming Broadband Deployment

Network Performance Testing: Measuring Speed and Latency

This compliance framework safeguards Connect America Fund accountability, transparency and integrity.

# HUBB Portal: Tracking Broadband Deployment

- Carriers participating in modernized funds with defined fixed broadband build-out obligations – requiring them to provide voice and broadband service to a specific number of fixed locations in areas eligible for support - must file deployment data annually with the High Cost Universal Broadband (HUBB) portal

- HUBB collects the geographic coordinates (latitude and longitude) of locations where carriers have deployed broadband using CAF support, the broadband speeds available at those locations (speed tier) and deployment dates

- HUBB performs automated, real-time <u>validation</u> of data submissions and only accepts locations that pass all validations checks:

  - Checks that lat/long of a reported location fall within area eligible for funding

  - Checks that the location is not a duplicate of one already submitted

  - Checks that date of deployment falls within fund timeline

- HUBB tracks carrier progress toward meeting interim and final deployment milestones. Carriers with annual milestones must also complete separate milestone certifications in HUBB

- **Annual HUBB filing deadline is March 1 for carriers to report broadband deployed with CAF support in the prior calendar year or certify "no locations to upload"**

Search Location

Feedback
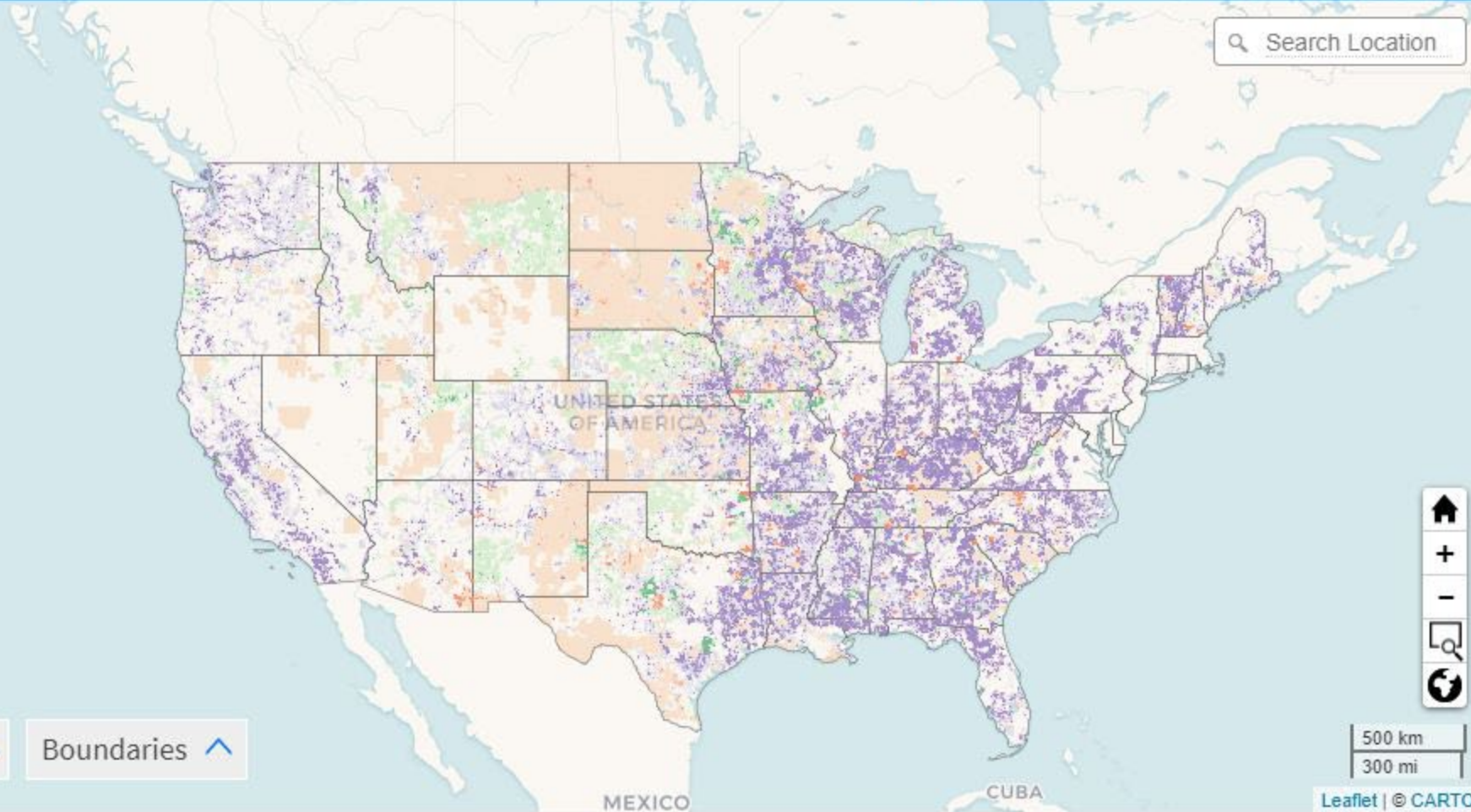
Fund

All Funds

State

All States

Company Name

Search Company Name

Speed (Applicable only to Local Data)

All Speeds

Deployment Year

All Years

Legend ∧   Boundaries ∧

UNITED STATES OF AMERICA

MEXICO   CUBA

500 km
300 mi

Leaflet | © CARTO

Clear All Filters

State ▲	Fund	Company Name	Deployment Year	Locations Obligation	?	Locations Deployed	?	Total Support Disbursed	?

State Data   **Local Data**   Displaying 1-25 of 762 records | Download Data ⤓

HUBB Portal: Filing Obligations by Fund

Carriers in these funds have until March 1, 2023, to file data for all locations deployed in 2022:

- Alternative Connect America Cost Model (ACAM)

- Revised ACAM

- ACAM II

- Connect America Fund-Broadband Loop Support (CAF BLS)

- Rural Broadband Experiments (RBE)

- Alaska Plan (other than carriers with individualized performance plans that only require them to maintain service at existing levels)

- Connect America Fund (CAF) Phase II Auction (CAF II Auction)

- Rural Digital Opportunity Fund (RDOF)

- Bringing Puerto Rico Together (Uniendo a Puerto Rico) and the Connect USVI Fund (PR/USVI)
  - Carriers receiving PR/VI Stage 2 fixed support

HUBB Portal: Deployment Milestones by Fund

- **Carriers with 2022 deployment milestones must also complete a <u>separate milestone certification</u> in HUBB**

  - <u>**New this year: Separate milestone certifications for separate deployment obligations by speed tier**</u>

  - Carriers may face verification reviews of their 2022 milestones following the March 1, 2023, filing deadline to confirm deployment to a random sample of reported locations

  - Carriers that miss deployment milestones face increased reporting obligations and potential loss of support

- **2022 Deployment Milestones**

  - **Original ACAM** carriers face a 60 percent milestone for deploying 10/1 Mbps broadband as of the end of 2022

  - **Revised ACAM** carriers face a 60 percent milestone for deploying 10/1 Mbps broadband <u>and</u> a 40 percent milestone for deploying 25/3 Mbps broadband, both as of the end of 2022

  - **ACAM II** carriers face their first milestone, for deploying 25/3 Mbps broadband to 40 percent of required location counts as of the end of 2022, and must meet similar deployment obligations on Tribal lands

  - **CAF II Auction** carriers face their first mandatory milestone, for 40 percent of required deployments as of the end of 2022

  - **RDOF** carriers can take advantage of an optional 20 percent milestone to reduce Letter of Credit (LOC) obligations

Verification Reviews: Confirming Broadband Deployment

- All carriers participating in CAF programs with defined broadband build-out obligations are subject to verification reviews to confirm deployment to a random sample of locations reported in the HUBB

- Verification review process confirms that a carrier deployed broadband service meeting the FCC's minimum performance standards to a qualifying number of locations by the relevant deployment milestone deadline. Carriers must supply documentation to serve as evidence of deployment to all locations selected for review.

- Verification reviews fall into three main categories:

  - Reviews tied to deployment milestones that begin after annual March 1 HUBB filing deadline. In 2023:

    - **Original ACAM** carriers will face 60 percent 10/1 Mbps milestone reviews

    - **Revised ACAM** carriers will face 60 percent 10/1 Mbps milestone <u>and</u> 40 percent 25/3 milestone reviews

    - **ACAM II** carriers will face 40 percent 25/3 milestone reviews

    - **CAF II Auction** carriers will face reviews of 40 percent milestone for required deployments

  - Verification reviews conducted at the request of carriers that complete deployment ahead of required milestones and are seeking to reduce their Letters of Credit (LOC) values

    - **RDOF** carriers can take advantage of an optional 20 percent milestone by the end of the second year of the program to reduce LOC values

  - Verification reviews conducted as part of the Rural Broadband Accountability Program (RBAP), a new FCC initiative to expand oversight of carrier compliance with CAF obligations, ensure public funds are properly invested and enhance program transparency

Performance Testing:

Measuring Broadband Speed and Latency

Network Performance Testing: Measuring Speed and Latency

- Performance Measures testing framework ensures that CAF-supported broadband service meets basic speed and latency standards

- Carriers must conduct quarterly speed and latency testing at a USAC-selected random sample of CAF-supported locations reported in the HUBB that have active subscribers, and submit and <u>certify</u> the results with USAC as part of the annual compliance process

  - Carriers must conduct one week of testing at 100 percent of subscriber locations selected for sample (unless subject to FCC waiver stating otherwise) in each quarter of calendar year, and must report and <u>certify</u> all test results by following July 1

- At least 80 percent of speed measurements must be at 80 percent of required speeds and 95 percent of low-latency measurements must fall at or below 100 milliseconds round-trip time

- FCC will consider failure to meet speed and latency requirements as a failure to deploy and may withhold support

- Carriers are subject to a year of quarterly "pre-testing" before official testing begins

  - Carriers will not face withholding of support for failing to meet speed and latency standards as long as they conduct one week of testing at 100 percent of subscriber locations selected for sample (unless subject to FCC waiver stating otherwise) in each quarter of calendar year, and report and <u>certify</u> all test results within one week of the end of the quarter

Network Performance Testing: Pre-Testing vs. Testing

Pre-Testing
- Carriers must conduct speed and latency tests for full sample (all subscribers selected) unless subject to FCC waiver
- Carriers in pretesting that do not conduct testing for all subscribers will fall into Level 1 non-compliance
- Carriers must submit and <u>certify</u> all test results
- No penalty for failure to meet speed or latency performance requirements
- Penalty for not submitting all test results
- Test results due within one week after the end of the quarter (4/7, 7/7, 10/7, 1/7)

Testing
- Carriers must conduct speed and latency tests for full sample (all subscribers selected) unless subject to FCC waiver
- Carriers must submit and <u>certify</u> all test results
- Penalty for failure to meet speed or latency performance requirements
- Penalty for not submitting all test results
- Results due by 7/1 for testing conducted the prior year (for compliant carriers) but USAC encourages carriers to file and certify results quarterly to get compliance reports to track progress
- Noncompliant carriers must upload and certify all test results within one week after the end of the quarter (4/7, 7/7, 10/7, 1/7)

Network Performance Testing: Testing Obligations by Fund
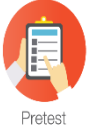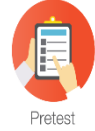
The windows to conduct performance measures pre-testing/testing vary by fund and began in 2020 with CAF II Model carriers (now done, with exception of ACS). Testing mandates currently apply to carriers in the following funds:

- **Alternative Connect America Cost Model (ACAM) and Revised ACAM ***
- **Rural Broadband Experiments (RBE) ***
- **Alaska Plan ***
- **ACS ***
- **ACAM II**
- **Connect America Fund-Broadband Loop Support (CAF BLS)**
- **Connect America Fund (CAF) Phase II Auction**

* Carriers must obtain a new random sample

Performance Measurement Process

Get HUBB Data	Add Subscriber Data	Upload Subscriber Data	Submit to Randomizer	Generate Sample	Download Sample	Test Sample	Submit Test Data
Download Certified HUBB Location Records	Add Subscriber IDs to Template	Upload Subscriber Template	Submit Subscriber Data to Randomizer	Generate Sample of Subscribers to Test	Download Sample of Subscribers to Test	Conduct Performance Testing of Sample	Submit All Speed and Latency Data for Subscribers

Remember To Certify Your PMM Data

Network Performance Testing: Performance Measures Module

The USAC Performance Measures Module (PMM):

- Lets carriers identify which locations that have been deployed with CAF support and reported in the HUBB have active subscribers
- Generates a random sample of those locations for speed and latency testing and provides the obligated speed tiers to be tested (based on the speed tiers reported for those locations in the HUBB compared with the speeds that carriers are required to deliver)
- Collects the speed and latency test results from carriers
- Calculates compliance with performance measures standards based on certified test results - **Don't forget to certify!**

Network Performance Testing: Obtaining a Random Sample

- Carriers download certified locations already filed in the HUBB

  - Data provided in CSV file (template for subscriber upload)

- Carriers add subscriber IDs as unique identifiers for locations with active subscribers

  - Do not use personally identifiable information (PII) for subscriber IDs

- Carriers upload CSV file with subscriber IDs into the PMM

  - Only include HUBB locations with subscriber IDs

- PMM generates a random sample of locations with active subscribers for testing, along with the obligated speed tiers to be tested

  - For funds with multiple speed tiers, the obligated speed tier to be tested for some locations may not be the same as speed tier reported for that location in the HUBB

Network Performance Testing: Obtaining a Random Sample

- Because some carriers participate in funds that start pre-testing/testing before the fund's first deployment milestone, there may be some carriers that are supposed to be testing but have no locations yet in the HUBB.

    - These carriers are not required to conduct testing until they have deployment data in the HUBB, but must begin testing within one quarter after they do

- <u>Before</u> requesting a new random sample from the PMM, USAC encourages carriers to first file all <u>new</u> deployments in the HUBB

    - While carriers have until March 1, 2023, to submit broadband locations built out in 2022 to the HUBB, USAC encourages carriers to file 2022 deployments as soon as possible so those locations can potentially be included in their random samples

- Carriers should only request a random sample one time and should not alter uploaded subscriber location data or request a new sample once a sample is generated for a SAC

Network Performance Testing: Obtaining New Samples

- The FCC requires carriers to obtain a new random sample of subscriber locations for speed and latency pre-testing/testing every two years

- **[Original ACAM](#), [Revised ACAM](#), [RBE](#) and [Alaska Plan](#) carriers and ACS began quarterly pre-testing in January of 2021 and quarterly official testing in January of 2022, and must obtain new random samples of subscriber locations for testing that starts in the first quarter of 2023**

- These carriers still must complete their performance measures testing and data submission for **2022** using their **existing samples**

  - Including subscriber replacements for fourth quarter of 2022

  - 2022 data is due by July 1, 2023, but USAC recommends that carriers submit it earlier

- PMM System has been updated to provide multiple cycle functionality

  - Cycle = Time period for a sample

  - Current Cycle: CY2021_22

  - New Cycle: CY2023_24

  - The PMM allows carriers to select the cycle for performing PMM functions (data submission, subscriber replacements, etc.)

Network Performance Testing: Obtaining New Samples

- PMM is now ready to accept subscriber location data from Original and Revised ACAM, RBE and Alaska Plan carriers and ACS, and generate new random subscriber location samples for these carriers to conduct speed and latency testing that starts in the first quarter of 2023. Carriers can now:
  - Upload all subscriber locations and submit to randomizer
  - Generate and download new sample(s) to prepare for quarterly testing in 2023
- **Carriers should start this process as soon as possible so they have enough time to complete a full week of speed and latency testing at the selected locations in the new samples by the end of the first quarter of 2023**
- New samples may contain some existing subscribers but should reflect new deployments, new subscribers and network upgrades (upgraded speed tiers)
  - Before requesting a new random sample from the PMM, carriers should first file all new deployments in the HUBB
    - While carriers have until March 1, 2023 to submit broadband locations built in 2022 to the HUBB, USAC encourages carriers to file 2022 deployments as soon as possible so those locations can potentially be included in random samples

Generate HUBB Data & Upload Subscriber Information

Subscriber Data Upload Template File - Before

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Cycle	Fund	SAC	Latitude	Longitude	Address	State	Speed Tie	# of Units	Carrier Lo	HUBB Loc:	Subscriber ID(s)	
2	CY2021_22	AK PLAN	613015	61.46269	-149.356	1472 MAIN	AK	12	62070	555	65149866		
3	CY2021_22	AK PLAN	613015	61.45808	-149.37	1472 MAIN	AK	12	62070	555	65149867		
4	CY2021_22	AK PLAN	613015	61.4537	-149.378	1472 MAIN	AK	12	62070	555	65149868		
5	CY2021_22	AK PLAN	613015	61.46065	-149.357	1472 MAIN	AK	12	62070	555	65149869		
6	CY2021_22	AK PLAN	613015	61.45813	-149.352	1472 MAIN	AK	12	62070	555	65149870		
7	CY2021_22	AK PLAN	613015	61.45808	-149.356	1472 MAIN	AK	12	62070	555	65149871		
8	CY2021_22	AK PLAN	613015	61.45395	-149.351	1472 MAIN	AK	12	62070	555	65149872		
9	CY2021_22	AK PLAN	613015	61.41771	-149.179	1472 MAIN	AK	12	62070	555	65149873		
10	CY2021_22	AK PLAN	613015	61.44517	-149.368	1472 MAIN	AK	12	62070	555	65149874		
11	CY2021_22	AK PLAN	613015	61.44282	-149.367	1472 MAIN	AK	12	62070	555	65149875		

Submit to Randomizer

Generate & Download Samples

Performance Measures Module

Upload Subscribers   Subscriber Detail   **Randomizer**   Performance Data

Randomizer Samples

Generate your randomized data samples below. The amount of subscribers listed in each sample is based on the total number of subscribers in each state for each speed tier within a Fund.

Test subjects must be randomly selected every two years from among the provider's active subscribers in each service tier in each state. Once subscribers are uploaded for the cycle, carriers can not add additional subscribers until the next sample is generated with the new two-year cycle.

Sample List

ⓘ ACAM,ACAMII,AK PLAN,CAF BLS,CAFII,CAFII AUC,RBE : **53 days** left to make changes to your randomized samples for Q4 2022.

Cycle	Fund	State
All	All	All

Clear All   **Filter**

Generate Sample	Cycle	Fund	SAC	State	Speed Tier	Created On	Created By	Status	Replace Subscribers ⓘ	Actions	No Valid Subscribers ⓘ
-	CY2021_22	ACAM	120045	NH	3	02/17/2021 12:45:06 PM	karen.fehrman@tdstelecom.com	Ready for Download	Replace	⬇ ⏱ +	-
-	CY2021_22	ACAM	120045	NH	4	03/08/2022 05:23:19 PM	karen.fehrman@tdstelecom.com	Ready for Download	Replace	⬇ ⏱ +	-
-	CY2021_22	ACAM	140061	VT	3	12/06/2021 06:03:51 PM	karen.fehrman@tdstelecom.com	Ready for Download	Replace	⏱ +	-
-	CY2021_22	ACAM	140061	VT	4	01/21/2022 02:12:26 PM	karen.fehrman@tdstelecom.com	Ready for Download	Replace	⬇ ⏱ +	-
-	CY2021_22	ACAM	150071	NY	4	02/16/2022 01:51:52 PM	DAMES@AGOC.COM	Ready for Download	Replace	⬇ ⏱ +	-

Upload Performance Data

Detailed Instructions: [PDF]

Select Fund   ACAM ⌄

Select State   AL ⌄

Select Sample   Select a Sample ⌄

Select a Sample
CY2021_22-ACAM-250304-AL-2
CY2023_24-ACAM-250304-AL-3
CY2021_22-ACAM-250304-AL-4
CY2023_24-ACAM-250304-AL-4

Select File Type

Select Start Date

of 7 day data submission period   MM/DD/YYYY

Upload Performance Data

Network Performance Testing: Timeline for Obtaining New Samples

October/November	November	December	January
Add New or Upgrade Existing Locations in HUBB	PMM Windows Opened for New Sample Generation	Contact Subscribers for Performance Testing in Q1	Start Data Collection for **New Sample**

Continue to Complete Testing for Q4 2022 with *Existing Sample*

Generate **New Sample**

Replace Subscribers as Needed for **New Sample**
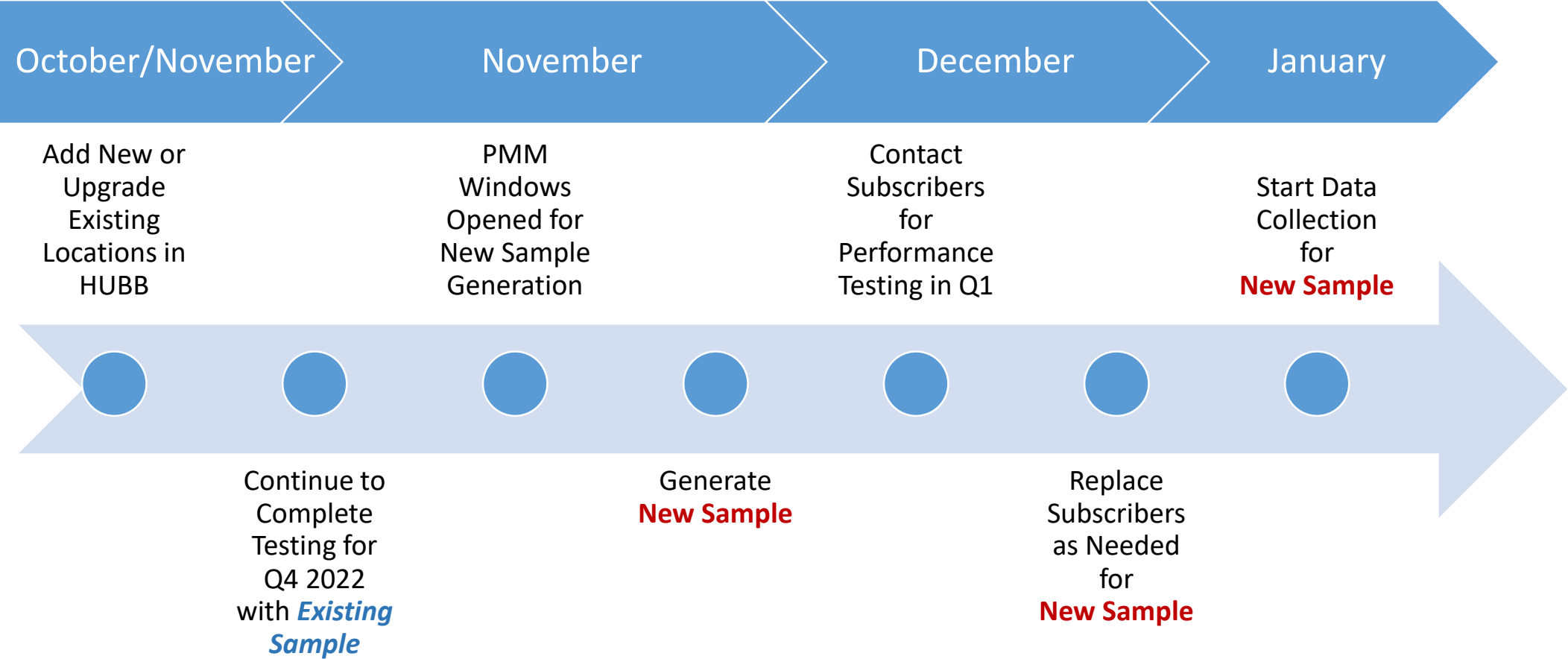
Network Performance Testing: Obtaining Random Samples

Carriers must test up to 50 locations for each speed tier they are required to deploy to in each state where they receive support, and must meet separate testing requirements for each fund in which they participate.

- Sample by State
  - Carriers receive samples for each state where they are authorized for support
- Sample by Speed Tier
  - Carriers in funds with multiple speed tier obligations receive samples for each speed tier
    - For example: ACAM II has deployment obligations for 4/1 Mbps and 25/3 Mbps, so ACAM II carriers receive two samples
- Sample Size
  - Sample size is based on the number of subscribers submitted
  - Maximum of 50 subscribers to test per sample

Network Performance Testing: Managing the Random Sample

- Replacing subscriber locations

  - To replace a selected location with next randomly selected one, carrier must provide reason:

    - Subscriber Refused to Allow Installation of Testing Equipment

    - Subscriber Dropped Service (no longer active)

    - Subscriber Demands Removal of Testing Equipment

    - Subscriber Subscribes to Lower Speed Than Being Tested

    - Natural Disaster

    - Other – Requires Explanation and USAC / FCC Review

- Adding subscriber locations

  - Carriers may request additional randomly selected subscriber locations to test, but must submit test data for any additional subscriber locations requested

- No valid subscribers

  - Carriers that cannot find five active subscribers to test are subject to verification that more active subscribers are not available

Network Performance Testing: Replacing Subscriber Locations

Steps for replacing subscriber locations selected for testing:

- Carriers that are able to collect data for all subscriber locations selected for testing in quarter:
  - First submit and certify data for the quarter
  - Then request replacement of subscriber location with the next randomly selected one
  - Provide a reason for replacing the subscriber
    - See list of valid replacement reasons (next slide)

- Carriers that are unable to collect data for all subscriber locations selected for testing in quarter:
  - Request replacement of subscriber location with the next randomly selected one
  - Provide a reason for replacing the subscriber
    - See list of valid replacement reasons (next slide)
  - Submit all available data for active subscriber locations
  - Certify data for the quarter as the last step

Network Performance Testing: Measuring Speed and Latency

- Carriers must use the same locations selected for speed and latency testing

- Carriers must provide subscribers at these locations with modem, router or other necessary customer premises equipment at no extra cost to the customer

- Carriers must test from customer premises to a remote test server located at, or reached by passing through, an FCC-designated Internet exchange point (IXP)

  - An IXP is any building, facility or location housing a public Internet gateway that has an active interface to a qualifying Internet Autonomous System (ASN)

  - Carriers serving areas greater than 500 air miles from an FCC-designated IXP may conduct all required speed and latency testing between the customer premises and the point at which traffic is aggregated for transport to the continental U.S.

- All speed tests for sample must be conducted in the same week and all latency test for sample must be conducted in the same week, but speed and latency tests may be conducted in different weeks

- Carriers must conduct testing between 6 p.m. and 12 a.m. local time

Network Performance Testing: Defining Speed and Latency

A **speed test** is a single measurement of download or upload speed of 10 to 15 seconds duration between a specific consumer location and specific remote server location

- Speed requirements vary by fund and the *minimum* speed requirement is 10 Mbps downstream and 1 Mbps upstream (10/1 Mbps)
- Carriers must conduct at least one download test and one upload test during each testing hour at each testing location
- A carrier may report that it was unable to successfully complete a speed test due to "crosstalk" caused by consumer activity if the consumer traffic meets thresholds of 64 Kbps for download tests or 32 Kbps for upload tests, and if the carrier begins attempting speed tests within the first 15 minutes of a testing hour and repeatedly retries and defers tests at one-minute intervals

A **latency test** is a single measurement of latency, often performed using a single User Datagram Protocol (UDP) packet or a group of three Internet Control Message Protocol (ICMP) or UDP packets sent at the same time

- Carriers must offer broadband service with latency suitable for real-time applications, including voice over IP (VoIP) calling
- Carriers must conduct one discrete latency measurement or observation per minute (60 per hour) for each testing hour at each subscriber test location
- A carrier may postpone a latency test because of crosstalk if the consumer traffic load exceeds 64Kbps downstream

Network Performance Testing: Reporting Speed and Latency

- Carriers upload speed and latency test results to PMM using CSV files

  - Separate CSV templates for speed and latency results

  - Carriers must submit and <u>certify</u> all test results

- Carriers cannot edit the number of units in HUBB records for subscriber locations selected for testing when those locations are part of the testing sample

- Carriers must obtain a new random sample after two years of testing/pre-testing

- **Original and Revised ACAM, RBE and Alaska Plan carriers began quarterly pre-testing in January of 2021 and quarterly official testing in January of 2022, so must obtain new random samples of subscriber locations for testing that starts in the first quarter of 2023** (More below)

Network Performance Testing: Tracking Compliance

- During **pre-testing**, carriers must submit and <u>certify</u> results within one week of end of the quarter
  - USAC provides quarterly compliance reports to carriers during pre-testing to let them track their progress in meeting speed and latency metrics
- During **official testing**, carriers must submit and <u>certify</u> speed and latency test results from the previous calendar year for each state and speed tier combination by annual July filing deadline
  - **USAC encourages carriers to file and <u>certify</u> test results on a quarterly basis, after each quarter's testing is complete**
  - **USAC provides quarterly compliance reports to carriers that file and <u>certify</u> test data on a quarterly basis to let them track their progress in meeting speed and latency metrics and address any shortfalls before the end of the year**
  - Final compliance is calculated annually: USAC does not withhold support from carriers that file and <u>certify</u> data on a quarterly basis and fail to meet speed and latency metrics before evaluating certified data for the full year.
    - USAC calculates final compliance (and withholds support from carriers that fail to meet speed and latency requirements) only after carriers submit and <u>certify</u> test data for all four quarters.

Network Performance Testing: Test Status Codes

- Status Code 1 - Successful

  - Successful test submitted to the PMM are assigned status code 1. A successful test is defined as a single, discrete observation of speed or latency conducted from the customer premises of an active subscriber within the criteria above.

- Status Code 2 – Failed Due to Cross-Talk

  - Deferred test, due to cross-talk, submitted to the PMM are assigned status code 2. If the consumer load is greater than 64 Kbps downstream for download tests or 32 Kbps upstream for upload tests, the provider may defer the affected test for one minute and reevaluate whether the load exceeds the relevant 64 Kbps or 32 Kbps threshold before retrying the test.

  - This load check and-retry must continue at one-minute intervals until the speed test can be run or the one-hour test window ends. For speed tests, a carrier that begins attempting speed tests within the first fifteen minutes of a testing hour, and repeatedly retries and defers the test at one-minute intervals due to consumer load meeting the adopted cross-talk thresholds may report that no test was successfully completed during the test hour because of cross talk.

- Status Code 3 – Failed (modem off, etc.)

  - Failed test submitted to the PMM are assigned status code 3. For a failed test, a carrier was unable to conduct a single, discrete observation of speed or latency from an active subscriber within criteria above.

Network Performance Testing: Calculating Compliance

- The PMM totals all test status records (statuses 1, 2 and 3) to determine if the correct number of test records have been submitted

  - The system gives credit for subscribers replaced during the quarter

  - The system adds missing test records into the compliance calculations as zero records

- PMM uses <u>only</u> test status 1 records to calculate speed and latency compliance

- <u>Reminders</u>

  - Collect and submit ALL test records to PMM

  - When cross-talk or failed tests are detected, continue testing at one-minute intervals to ensure all data records are collected

- The PMM allows carriers to view and download quarterly compliance reports displaying details at the Study Area Code (SAC) level about the percent of upload and download speed tests and latency tests that met network performance standards set by the FCC

- For a detailed explanation of how the PMM calculates compliance, please see: https://www.usac.org/wp-content/uploads/high-cost/documents/Tools/PMM-Compliance-Calculations.pdf

Network Performance Testing: Measuring Speed and Latency

For more information about performance measures testing,

please visit the performance measures resources webpage:

https://www.usac.org/high-cost/annual-requirements/performance-measures-testing/

Resources include:

Performance Measures testing schedule (by fund)

FCC information about the performance measures testing program

Charts showing acceptable test paths and remote server locations

List of vendors that are helping carriers with speed and latency testing

Quick tips guide to the PMM

Performance measures testing webinar recording

Performance measures testing webinar presentation

An explanation of PMM compliance calculations

Other CAF Resources

HUBB Resources Page

HUBB FAQs

Guide to Geolocation Practices

Verification Resources Page

Multifactor Authentication Troubleshooting Steps
(for E-File access)

Questions?