



# BEAD Program: Performance Measures for BEAD Last-Mile Networks Policy Notice Primer

*This document is intended solely to assist recipients in better understanding the Broadband Equity, Access, and Deployment (BEAD) Program and the requirements set forth in the Infrastructure Investment and Jobs Act, [Notice of Funding Opportunity \(NOFO\)](#), as modified by the [BEAD Restructuring Policy Notice \(RPN\)](#). This document does not and is not intended to supersede, modify, or otherwise alter applicable statutory or regulatory requirements, the terms and conditions of the award, or the specific application requirements set forth in the NOFO not modified by the RPN. In all cases, statutory and regulatory mandates, the terms and conditions of the award, and follow-on policies and guidance, shall prevail over any inconsistencies contained in this document.*



# Performance Measures Testing Overview

This Primer supports Eligible Entities and subgrantees in measuring the technical performance of Broadband Equity, Access, and Deployment (BEAD) funded networks once operational.

## PERFORMANCE MEASURES OVERVIEW

The performance measures outlined in the *BEAD Program: Performance Measures for BEAD Last-Mile Networks Policy Notice* are consistent with well-established FCC practices and designed to minimize the administrative burdens on Eligible Entities and subgrantees.

## WHY IS TESTING NECESSARY?

Eligible Entities and subgrantees must ensure that BEAD funded networks comply with the speed, capacity, latency, and availability performance standards outlined in the [BEAD NOFO](#) and IIJA. Eligible Entities must confirm that each subrecipient’s measurement report adheres to these requirements in their Semiannual Report (SAR) to NTIA.

## WHO IS TESTED?

A subgrantee must test a random sample of their active subscribers in each state for each committed speed tier and technology. Sample sets should come from the National Broadband Map, using locations reported to the FCC Broadband Data Collection (BDC). The number of test locations should follow table 1.

| Active Subscribers | Minimum Number of Test Locations |
|--------------------|----------------------------------|
| 50 or fewer        | 5 locations                      |
| 51 – 500           | 10% of locations                 |
| 500 or greater     | 50 locations                     |

Table 1: Test Locations per Active Subscriber Count

## WHEN DO TESTS OCCUR?

Network performance testing must be done annually throughout the period of performance for inclusion in the first SAR of the year and prior to subgrant close-out. Eligible Entities must set reporting deadlines that allow subgrantees sufficient time to complete testing and enable review and inclusion in this SAR. Speed and latency tests should be conducted at their designated intervals over one week (including weekends) between 6:00 pm and 12:00 am local time.

# Performance Measures Testing Approach

Subgrantees testing BEAD-funded networks will use compliance standards and testing protocols adopted by the FCC. If testing infrastructure fails, Eligible Entities may discard or adjust impacted testing data. Eligible Entities may strengthen certain testing requirements as they deem necessary.



## HOW MAY TESTING OCCUR?

Test traffic must flow through FCC-designated Internet Exchange Points (IXPs), listed in Appendix B of the [FCC Performance Measures Reconsideration Order](#). Additionally, test traffic should not receive priority over non-test traffic passing through the same IXP.



## WHAT IF TEST INFRASTRUCTURE FAILS?

Subgrantees are not allowed to edit or exclude any test measurements. If subgrantees suspect any test infrastructure has failed and results have been impacted, subgrantees must still submit their results with evidence of the failure to the Eligible Entity. In these circumstances, Eligible Entities may discard test results and adjust compliance scores.



## ARE TESTING REQUIREMENTS FLEXIBLE?

Eligible Entities must detail corrective actions to be taken upon a finding of non-compliance with the **BEAD Program: Performance Measures for BEAD Last-Mile Networks Policy Notice**. They may for example, require more frequent testing until the subgrantee demonstrates compliance, but may not change the number of locations tested, number of tests per location, etc:

| Allowable Changes |   | Unallowable Changes |                    |   |                |
|-------------------|---|---------------------|--------------------|---|----------------|
| ✓                 | Testing Frequency (during non-compliance) | ✗                   | Speed <sup>1</sup> | ✗ | Reliability    |
|                   |   | ✗                   | Latency            | ✗ | Sample Size    |
| ✓                 | Corrective Actions                        | ✗                   | Number of Samples  | ✗ | Testing Window |

**NOTE** | Only summarized outcomes of the testing requirements stipulated in the Performance Measures Policy Notice should be reported in the SAR and to NTIA.

<sup>1</sup> Eligible Entities must measure performance based on the “committed speed tier” – the lowest combination of download and upload speeds that a provider has committed to deliver for a specific BEAD project as part of its subgrant conditions. The committed speed tier may not be less than 100 Mbps downstream and 20 Mbps upstream.

# Performance Measures Requirements

Performance testing should be conducted in accordance with FCC practices, ensuring privacy and reproducibility and minimizing subscriber and subgrantee burden.



## TESTING METHODS

Metrics may be measured actively using the following:

- ✓ Standardized CPE WAN Management Protocols (e.g. [TR-069](#) or [TR-369](#));
- ✓ Software included on a supplied residential gateway; or
- ✓ Network measurement devices installed at subscriber locations. (*Note: subgrantees must obtain subscriber consent to deploy separate measurement specific hardware on customer premises.*)



## SPEED TESTING

Subgrantees must submit the data in Table 2 to the Eligible Entity in their measurement reports to ensure speed test compliance:<sup>2</sup>

- ☐ The measurement must last at least 15 seconds between the customer and a remote server location
- ☐ The test must be conducted once per hour, at the beginning of each hour, for one week<sup>3</sup>
- ☐ 80% of measurements must be at or above 80% of the committed speed, with a minimum of 80 megabits per second (Mbps) download and 16 Mbps upload for Broadband Serviceable Locations (BSLs), as part of the subgrantee agreement

| Field          | Description   |
|----------------|---|
| BSL Identifier | BSL Fabric Identifier   |
| Subscriber ID  | Subgrantee Identifier   |
| Speed Type     | 1 = Download<br>2 = Upload                                      |
| IP Target      | IXP Address   |
| Start Test     | ISO 8601 UTC format with milliseconds (ms) and time zone offset |
| End Test       | ISO 8601 UTC format Including ms and time zone offset           |
| Bytes          | Total bytes sent or received                                    |
| Test Status    | 1 = Success<br>2 = Cross Traffic<br>3 = Other                   |
| Comments       | Optional  |

Table 2: Universal Service Administrative Company (USAC) Performance Measures Speed Testing Data Fields and Formatting CSV Template

<sup>2</sup> Speed requirements and data reporting apply in both the upload and download directions.  
<sup>3</sup> If application traffic load is greater than 10% of the committed speed tier in the relevant direction, the subgrantee may defer the affected test for one minute.

# Performance Measures Requirements

Latency and availability/reliability performance testing and reporting should be done in accordance with the practices outlined in the Performance Measures Policy Notice.



## LATENCY TESTING

A latency test is a roundtrip measurement of either a single User Datagram Protocol (UDP) packet or group of three Internet Control Message Protocol (ICMP) or UDP packets sent simultaneously. Subgrantees must submit the data in Table 3 to the Eligible Entity in their measurement reports to ensure latency testing compliance:

- ☐ The test must be conducted once per minute for one test hour
- ☐ 95% of measurements must be at or below 100 milliseconds

| Field            | Description   |
|------------------|---|
| BSL Identifier   | BSL Fabric Identifier   |
| Subscriber ID    | Subgrantee Identifier   |
| IP Target        | IXP Address   |
| Start Test       | ISO 8601 UTC format with ms and timezone offset                 |
| Latency          | Roundtrip time (RTT) in ms                                      |
| Packets Sent     | Packets successfully sent                                       |
| Packets Received | Packets successfully received                                   |
| Test Status      | 1 = Success<br>2 = Not Run: Cross Traffic<br>3 = Not Run: Other |
| Comments         | Optional  |

Table 3: USAC Performance Measures Latency Testing  
Data Fields and Formatting CSV Template



## AVAILABILITY/RELIABILITY TESTS

Subgrantees must include a narrative Response, as outlined in Figure 1, in their measurement reports to the Eligible Entity to demonstrate availability/reliability compliance. Eligible Entities may request additional details in their subgrantee agreements.

- ☐ Report cumulative network outages<sup>4</sup> over the selected 365-day period that exceed 48 hours (for an annual uptime of 99.45%), regardless of whether the outages are reported by the subscriber

Subgrantees must report all outages starting at the time of customer report or first determination that the outage is the responsibility of the subgrantee.

**Availability/Reliability Reporting**

Subgrantees must submit a narrative response that includes the number of BSLs that exceeded the availability/reliability requirement and an explanation of the events that contributed to the failure to meet the required standard.

Figure 1: Availability/Reliability Reporting Response

<sup>4</sup> Network outages exclude scheduled maintenance, power outages, subscriber equipment disconnection, outages during a FEMA-declared disaster, and up to a month after the activation of the FCC’s Disaster Information Reporting System (DIRS).

# Performance Measures Compliance

Subgrantees are obligated to comply with the guidance in the Performance Measures Policy Notice and the NOFO. Eligible Entities may take necessary action in response to non-compliance as outlined in the NOFO.



## TRANSPARENCY AND REPORTING

To comply with transparency and reporting requirements, subgrantees are required to:

- ✓ Document the methods, standards, and parameters used in measuring network performance in each submission, denoting changes;
- ✓ Submit this documentation in a measurement report to the Eligible Entity and publish on their website;
- ✓ Retain data for inspection by the Eligible Entity or NTIA during the Period of Performance; and
- ✓ Provide an official certification of accuracy for their measurement report.

Eligible Entities shall confirm that each subgrantee is adhering to Performance Measures Policy Notice requirements in their reporting to NTIA.



## COMPLIANCE

*A subgrantee is compliant if they perform all of the following:*

- ☐ Meet all four thresholds (Download, Upload, Latency, Reliability);
- ☐ Use a compliant testing methodology;
- ☐ Report measurement results to the Eligible Entity on time and in the required [CSV format](#), using a separate file for each technology and speed tier; and
- ☐ Comply with transparency requirements.



**Non-compliance Tracking Responsibility** | Subgrantees are responsible for reporting any non-compliance to the Eligible Entity. Eligible Entities may enforce penalties for non-compliance by withholding final payments to the subgrantee and should establish a remediation process to support subgrantees in complying with the outlined requirements.