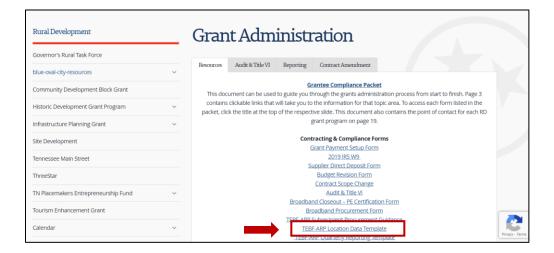# Broadband Infrastructure Location Data

Job Aid

Overview: Fast and responsive networks allow Tennesseans to fully realize the benefits of connectivity, while also laying the foundation for sustained future growth and innovation. Recognizing this, TNECD requires TEBF grantees to deploy broadband networks capable of meeting minimum service standards that meet current and future use cases. To this end, it seeks to capture a comprehensive picture of the speed and latency of the networks, the number and types of locations served, as well as the types of community anchor institutions.
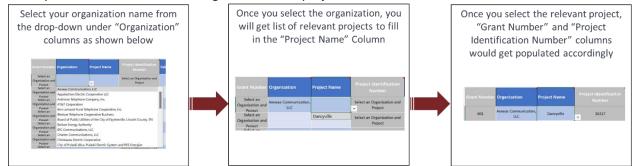
Objective: This reference document provides the information you will need to report Location Data as part of SLFRF Quarterly Reporting in line with the revised template. The template seeks to promote consistency across federal agencies and adopts compliance standards and testing protocols for speed and latency established and used by the Federal Communications Commission. This is in line with the SLFRF Compliance and Reporting Guide, per updated Treasury Guidance from June 2023. The data collected here may be leveraged to update FCC maps on a regular basis to foster a dynamic understanding of broadband access by geography.
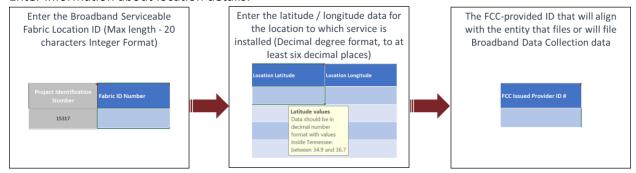
Steps:

1. Open the **TNECD Rural Development Grants Administration** webpage here
2. Navigate to the download TEBF Broadband Infrastructure Location Data Template
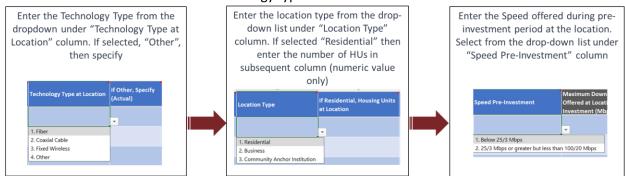
3. Enter your basic information on organization and project:

Select your organization name from the drop-down under "Organization" columns as shown below	Once you select the organization, you will get list of relevant projects to fill in the "Project Name" Column

Once you select the relevant project, "Grant Number" and "Project Identification Number" columns would get populated accordingly

4. Enter information about location details:

Enter the Broadband Serviceable Fabric Location ID (Max length - 20 characters Integer Format)

Enter the latitude / longitude data for the location to which service is installed (Decimal degree format, to at least six decimal places)

The FCC-provided ID that will align with the entity that files or will file Broadband Data Collection data

5. Enter information on location and technology type:

Enter the Technology Type from the dropdown under "Technology Type at Location" column. If selected, "Other", then specify

Enter the location type from the drop-down list under "Location Type" column. If selected "Residential" then enter the number of HUs in subsequent column (numeric value only)

Enter the Speed offered during pre-investment period at the location. Select from the drop-down list under "Speed Pre-Investment" column

6. Enter Speed related information:

Maximum Download Speed Offered at Location Post-Investment (Mbps)	Maximum Download Speed Delivered at Location Post-Investment (Mbps)	Maximum Upload Speed Offered at Location Post-Investment (Mbps)	Maximum Upload Speed Delivered at Location Post-Investment (Mbps)	Latency Delivered at Location Post-Investment (ms)

Note:
- *Speed details are to be entered in the Mbps only, if you capture speed details in any other units then please convert it to Mbps and then enter (For example – 1 Gig must be entered as 1,000 in the respective field)*
- *Speed related fields would only accept numerical values thus if the speed is 100 Mbps then please enter 100 only.*
- *Latency details must be entered in ms units only (For example – 1 second must be entered into 1,000 in the latency field.*
- *Latency related field would only accept numerical values thus if the latency recorded is 5ms then please enter 5 only.*

7. Upload your completed Location Data file as an attachment to your **Broadband Accessibility Grantee Quarterly Report**

Upload the TEBF-ARP Location Data Template. *

| Choose File | Remove File | No File Chosen |

Kindly download the attached Excel file, fill it out for each location to be served by a funded project, and then proceed to upload it here

Frequently Asked Questions:

I. **Location Data Template**
  1. **Where should I find my FCC Provider ID?**
     FCC (Federal Communications Commission) issued provider ID is a unique identifier assigned to entities that provide communication services. It is a numerical code that distinguishes different service providers within the FCC's regulatory framework. It is a **Six-digit code**, which can be found against respective entity's name in the: BDC Provider ID Table of Service Providers
  2. **Can I enter FCC Registration Number (FRN) instead of FCC Provider ID?**
     No, FRN (FCC Registration Number) is a broader identifier that is used to track entities across all interactions with the FCC, not just communication services. The FRN is a 10-digit number assigned to individuals and businesses registering with the FCC, and it is utilized for various regulatory purposes beyond just communication services. Thus, please enter the FCC Provider ID only for the purpose of location data reporting.
  3. **What should I do if I don't have access to my Fabric ID?**
     If you still do not have access to the Fabric IDs for your location, you should not submit this template until you have access. Please reach out to us if you do not have access.
  4. **Which unit should I use to report speed?**
     All speed data should be standardized and reported in Megabits per Second (Mbps).
  5. **Which unit should I use to report latency?**
     All latency data should be standardized and reported in milliseconds (ms).
  6. **How can I determine my longitude-latitude?**
     The highly preferred and Treasury-encouraged method for generating latitude/longitude data for each location to which service is to be installed is through the use of a commercially available GPS-encoded device physically present at the location. More guidance regarding this preferred method, Geolocation with GPS in the Field, can be found in Geolocation Methods.

     Please double check the numbers **are between** the follow:
     Latitude:
     - Northernmost point: 36.6781° N
     - Southernmost point: 34.9829° N

     Longitude:
     - Easternmost point: -81.6469° W
     - Westernmost point: -88.0718° W

II. **Speed and Latency Testing**
   1. **What is, and what is not, a speed test?**
       A speed test is a single measurement of download or upload speed of 10 to 15 seconds duration between a specific consumer location and a specific remote server location.
       It is *not* the result of web services that analyze Internet access performance metrics such as Ookla and Speedtest.net. This is because the objective of the exercise is to measure performance on an individual system and not the ONT, so as to test the wired network.
   2. **What is a latency test?**
       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 essentially the same time, as is common with ping tests.
   3. **What testing options are available to me?**
       a. Testing infrastructure from the Measuring Broadband America (MBA) initiative, in which a number of providers already participate.
       b. Existing network management systems and tools (off-the-shelf testing);
       c. Provider-developed self-testing configurations (provider-developed self-testing or self-testing)
   4. **Do I have to invest in and implement new internal systems for testing?**
       To maintain a stringent performance compliance regime while avoiding unnecessary burdens on smaller carriers, we allow flexibility concerning the specific testing approach. As a result, we do not require that providers invest in and implement new internal systems; instead, providers may perform speed and latency tests with readily available, off-the-shelf solutions or existing MBA infrastructure. On the other hand, some providers may prefer implementing their own self-testing systems, especially if such testing features are already built into CPE for the carrier's own network management purposes.
   5. **How can I self-test?**
       You may implement a provider-developed self-testing configuration using software installed on residential gateways or in equipment attached to residential gateways to regularly initiate speed and latency tests. For self-testing, use of the TR-143 Standard is encouraged. Self-testing may not be conducted through free or paid web services like Ookla.
   6. **Do I have to test every single subscriber?**
       No, grantees do need not to test every single subscriber. They only need to test a maximum of 50 randomly-selected subscribers per state per speed tier for speed testing and 50 randomly-selected subscribers per state for latency.
   7. **When do I conduct testing?**
       Testing must be conducted for one week during each quarter of the year. In those weeks, testing must be performed between the hours of 6:00 pm to 12:00 am local time each day, including weekends (testing hours).
   8. **Which locations do I test?**
       Test subjects for speed testing must be randomly selected from among the provider's active subscribers. You can conduct latency testing on the same randomly selected sample. Test subjects must be randomly selected every two years from among the provider's active subscribers. Previously subscribed locations can be used again in future randomized testing samples. You may use the FCC randomizer or an Excel spreadsheet-based randomizer.
       Note – This requirement may change in future subject to any future update / change from Treasury.

9. **How many locations do I have to test?**

   The number of consumers to be tested will be based on the number of subscribers at grant-supported locations, with a maximum of 50 randomly selected subscribers per state per speed tier for speed testing and 50 randomly-selected subscribers per state for latency. The number of locations can be determined through the following matrix:

Number of subscribers at TEBF-ARP Contract and Service Tier	Number of Test Locations
50 or fewer	5
51-500	10% of total subscribers
Over 500	50

10. **What options are available for carriers facing challenges in finding a sufficient number of subscriber locations for testing due to unique circumstances?**

    We recognize that a few carriers facing unique circumstances may find it extraordinarily difficult to find a sufficient number of subscriber locations to test. Although we decline to modify the adopted sample sizes, rules may be waived for good cause shown. If you cannot meet the required sample size of subscribers, you will be subject to verification that there were not
    sufficient subscribers at the time of required reporting.

    If you have concerns about not being able to meet these requirements, reach out to us individually and we will work with you determine the best solution. We encourage clear and detailed documentation in your reporting to provide an understanding of your unique circumstances. *(FCC 19-104, Pg 18)*

11. **Will there be a verification process for the speed and latency scores I report?**

    Yes, at the close-out phase of your projects, an independent sampling will be carried out by Stantec. This will be a one-time test to show the results of your test. This process aims to uphold transparency and the integrity of the reported data and will be conducted with your close out monitoring site visit. There will be no immediate penalty for failing to meet the speed test requirement; however, the speed test results must be upheld. The last 15% of the payments will be withheld until the speed test is successfully reported.

12. **How do I know if I am in full compliance with speed and latency requirements?**

    To ensure full compliance with the speed standards:
    - "a provider's certified test results, for each state and service tier, must show that 80 percent of the upload measurements are at or above 80 percent of the required upload speed and 80 percent of the download measurements are at or above 80 percent of the required download speed." *(FCC 18-710, Pg 28)*

    To ensure full compliance with the latency standards,
    - "a provider's certified test results must show, for each state, that 95 percent or more of all tests of network round trip latency are at or below 100 ms when measured between the customer premises and a remote server that is located at or reached by passing through an FCC-designated IXP. This approach ensures a connection that supports reasonably foreseeable real-time applications. In the limited circumstance where even a fiber deployment cannot achieve this latency threshold (for example in a remote territory), Treasury may expand the latency thresholds." *(FCC 18-710, Pg 28)*

In order to demonstrate continued compliance with these standards, subgrantees must perform speed and latency tests from the customer premises of an active subscriber to a remote test server at an end-point consistent with the requirements for a Commission-designated IXP.

13. **Are carriers obligated to provide speeds beyond their existing commitments for TEBF?**

    No, carriers are not required to offer speeds beyond what they are already obligated to deploy as a condition of receiving TEBF. Thus, for a location where a carrier is obligated to provide 100/25 Mbps service, we only require testing to ensure that the location provides 100/25 Mbps service, even if the customer there has ordered and is receiving 1000/1000 Mbps service. *(FCC 19-104, Pg 25)*

14. **What if a location subscribes to a speed tier lower/higher than 100/20?**

    If they subscribe to a lower tier:
    - "We reconsider the Bureaus' requirement that carriers meet and test to their obligation speed(s) regardless of whether their subscribers purchase Internet service offerings with speeds matching the required speeds for those TEBF-eligible locations. Specifically, in situations where subscribers purchase Internet service offerings with speeds lower than the TEBF-required speeds for those locations, carriers are not required to upgrade individual subscriber locations to conduct speed testing unless there are no other available subscriber locations at the TEBF-required speeds within the same state or relevant service area. We recognize that there may be significant burdens associated with upgrading an individual location, particularly when physically replacing equipment at the customer premises is necessary. Some carriers may still find it necessary to upgrade individual subscriber locations." (*FCC 19-104 p. 19*)

    If they subscribe to a higher tier:
    - "We clarify, however, that carriers are not required to provide speeds beyond what they are already obligated to deploy as a condition of their receipt of high-cost support. Thus, for a location where a carrier is obligated to provide 10/1 Mbps service, we only require testing to ensure that the location provides 10/1 Mbps service, even if the customer there has ordered and is receiving 25/3 Mbps service." *(FCC 19-104, Pg 25)*

15. **How to document speed data recorded and how to build it with rising subscriber base?**

    Please refer to below method on how to record and document speed data:
    - **Recording Testing Results in the Template:** Record the median value of each sample in the Excel sheet provided, even though you may conduct over 42 tests.
    - **Documentation for Mid-Point Monitoring and Close-Out Visit:** Keep a comprehensive record of all testing activities including times, dates, and locations for both mid-point monitoring and close-out visit.
    - **Validation of Randomization of Samples:** Document the method used for randomizing samples for both mid-point monitoring and close-out visit. Ensure transparency and reproducibility in the sampling process.
    - **Sampling for Each Project:** Sample for each project to ensure representative data collection. Maintain consistency in sampling methodology across different projects.
    - **Adapting Sample Size with Subscriber Growth:** As subscribers grow, expand the sample size accordingly. Retain the base sample in the randomized sample and add corresponding amount due to the new subscribers as necessary. For instance, if

subscribers grow, keep the first 50 in the sample and add new subscribers into the sample.

Resources

Universal Service Administration Co. (USAC) Performance Measures Testing web page:	https://www.usac.org/high-cost/annual-requirements/performance-measures-testing/
TNECD Broadband Grant web page:	https://www.tn.gov/ecd/rural-development/broadband-office/grants.html
FCC 19-104 (Differences among ISPs - modifications to requirements):	https://docs.fcc.gov/public/attachments/FCC-19-104A1.pdf
FCC 18-710 (Establishes original speed & latency testing requirements):	https://docs.fcc.gov/public/attachments/DA-18-710A1.pdf
FCC 20-1510:	https://docs.fcc.gov/public/attachments/DA-20-1510A1_Rcd.pdf
FCC 21-1605:	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwihgK6u882BAxXIkokEHTAiC8gQFnoECA8QAQ&url=https%3A%2F%2Fdocs.fcc.gov%2Fpublic%2Fattachments%2FDA-21-1605A1.docx&usg=AOvVaw1R4xvJaL0DXWuifWtYo-RG&opi=89978449
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