

State of Nevada
Governor's Office of Science, Innovation, and Technology
High Speed NV Initiative Phase 1 RFP
Eligible Project Area: Region 5 (Churchill County)

September 21, 2022

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I. Introduction and Overview

The State of Nevada Governor’s Office of Science, Innovation, and Technology (“OSIT”) hereby requests proposals for the Nevada State Facilities/Middle Mile Request for Proposal for Eligible Project Area Churchill County.

This RFP is one of 10 largely identical RFPs for 10 separate regions of the State of Nevada (“Eligible Project Areas”). The 10 Eligible Project Areas are mapped in Appendix G. The division of the State into multiple Eligible Project Areas is intended to increase the number of potential bidders for this program, increase competition among those responding to this RFP (“Bidders”) for various project areas, and make feasible applications from smaller Bidders – including Nevada-based companies -- that may not be able to bid on an opportunity that requires construction across larger areas of Nevada.

For a range of state-owned public facilities (“State Facilities”) across each of the 10 Eligible Project Areas, OSIT seeks proposals for leased lit point-to-point fiber transport service (“Leased Lit Fiber Transport Service”) or leased dark fiber (“Leased Dark Fiber Service”). The State Facilities are listed in Appendix C).¹

OSIT also intends that a range of other public institutions, including schools, libraries, and localities, will have opportunity to procure Leased Lit Fiber Transport Service, Leased Dark Fiber Service, and special construction of fiber through contracts awarded as a result of this RFP, including with respect to the Federal Communications Commission’s E-Rate and Healthcare Connect programs.

Bidders must provide committed pricing to serve all State and other public Facilities within the Eligible Project Area for each RFP for which a bid is submitted.

OSIT anticipates that many of the locations in Appendix C will require construction of new fiber facilities to meet the service requirements of this RFP. Through this RFP and responding bids, OSIT anticipates funding that fiber construction with funds from the Coronavirus State and Local Fiscal Recovery Funds (“SLFRF”) program of the American Rescue Plan Act of 2021 (“ARPA”).

It is essential that Bidders understand that the State seeks the best possible monthly recurring pricing for Leased Lit Fiber Transport Pricing and Leased Dark Fiber Service and does not intend for Bidders to recover the cost of construction through service fee pricing. Rather, the SLFRF funds have been allocated to pay for necessary construction. Bidders are encouraged to bid the most competitive pricing and this competitive process is designed to ensure that State Facilities and other customers benefit.

Awardees of construction funds will be required to grant the State a minimum 30-year Indefeasible Right of Use (“IRU”) for use by the State of Nevada of at least 36 strands of fiber wherever State funds are used for construction, including all maintenance of the fiber for the term of the IRU. The IRU agreement will be negotiated as a separate contract from the service agreement for the Leased Dark

¹ Service is expected to originate at the State-operated facility listed as the Z location on the pricing schedule and be delivered to the State-owned hub that is affiliated or listed as the A location on the pricing schedule (Appendix C).

Fiber Service and Leased Lit Fiber Transport Service to the State Facilities.

Where SLFRF funds are used for construction, the goal is for deployment of interconnected middle mile facilities throughout Nevada that will deliver connectivity to the State Facilities and will thereby also create new opportunity for connections to unserved and underserved residential areas of the State. By meeting the connectivity needs of both the State Facilities and of last mile Internet Service Providers, this program will efficiently use public funds to address broadband public policy goals.

In keeping with this concept, the State's technical evaluation of proposals will be focused on the monthly recurring pricing of the service for State facilities and the degree to which the Bidder displays a commitment to work to serve last mile unserved and underserved residential areas with its proposed solution. The commitment to serve unserved and underserved areas can be demonstrated in several ways including the proposed pathways fiber routes to serve State facilities that brings fiber in close proximity to unserved and underserved residential areas.

Given the value of middle mile fiber that connects remote anchor institutions such as State Facilities, it is likely that future opportunities will emerge to use the same fiber to serve residential and business customers in the areas surrounding the target facilities. OSIT anticipates that awardees will have an opportunity to work with Nevada county governments to apply for last mile broadband infrastructure grant funding that will be made available in 2023 (or possibly 2024, depending on federal government timelines). The last mile grant program will offer the potential to coordinate last mile and middle mile construction projects. The State intends to offer flexibility regarding service delivery dates to State facilities in order to allow for this coordination and efficiency in public expenditures.

In addition, a range of local Nevada governments in this region, including county and municipal entities, have chosen to add their own facilities to the list of State Facilities listed in Appendix C. No local government facilities are included in this eligible project area RFP.

NV Energy Participation: NV Energy and OSIT have been working closely to determine how NV Energy can support the goals of the High Speed Nevada Initiative. NV Energy has assets including dark fiber, transmission towers and other vertical assets along some routes that are adjacent to or near facilities that are included in this RFP. NV Energy would welcome the opportunity to engage with broadband service providers who would look to utilize NV Energy assets as part of their proposed solutions to this RFP. Broadband Service Providers should be aware that resolution of private easement issues could be part of the terms of use of NV Energy assets. Please contact Jeff Brigger at Jeff.Brigger@nvenergy.com or Mike Zaccagnino at Michael.Zaccagnino@nvenergy.com if you are interested in learning more.

The deadline for completion of any necessary construction is December 31, 2026, consistent with federal rules for ARPA SLFRF funds. The State plans for new service to the State Facilities listed in Appendix C to begin on or before December 30th, 2023; however, given the extensive fiber construction involved, the State anticipates working with awardees to determine a realistic service activation date.

II. RFP Timeline

OSIT anticipates the following timeline and schedule for the RFP process and further anticipates that some or all of these dates may change based on a range of circumstances.

- September 21, 2022: Release of Request for Proposal
- September 30, 2022: In-person Bidder workshop at Governor Sisolak’s Infrastructure Summit (will be held at the Las Vegas Convention Center; registration is free)
- October 6, 2022 10-11AM PT: Virtual Bidder workshop ([Zoom Link](#))
- October 14, 2022 (1-2PM PT): Virtual Technical Assistance Workshop-- NV Energy to discuss terms of the potential use of NV Energy facilities in proposed solutions ([Zoom Link](#))
- October 19, 2022: Deadline for questions regarding RFP (e-mail: highspeedNV@gov.nv.gov)
- November 1, 2022, 2022: Answers to RFP questions posted by OSIT
- December 19, 2022: All RFP responses due at 5 PM PT (e-mail: highspeedNV@gov.nv.gov)
- January 2023: OSIT to interview Bidders if determined necessary
- February 19, 2023: Award date (tentative)

III. Eligible Bidders

All entities, both public and private, that have the technical, financial, and managerial capacity to build and operate broadband communications networks are eligible to bid under this RFP, including Internet Service Providers, telephone and cable companies, utility companies, and other entities. Partnerships and consortium applications are eligible (e.g., two or more providers partnering to serve an Eligible Project Area) so long as a single, qualified entity serves as lead bidder and accepts all the obligations and responsibilities of the awarded contract.

IV. Scope of Services

The following describes the services sought under this RFP. Please note the following requirements for all bids:

- Bidders must include bids for all State Facilities within the Eligible Service Area.
- Bidders must include bids for both Leased Lit Fiber Transport Switched (Layer 2) and Managed (Layer 3) Service and Leased Dark Fiber Service for all State Facilities within the Eligible Service Area.
- Bidders must include bids for all bandwidth levels and terms for Leased Lit Fiber Transport Services.
- Bidders must include bids for all terms for Leased Dark Fiber Service.
- Bidders must include a commitment and demonstration of how its successful bid would serve to increase service to the surrounding unserved and underserved residential and business markets.

A. Overview of Services Sought

1. **Services Sought:** The State seeks bids for both Leased Lit Fiber Transport Service (Layer 2 and Layer 3) and Leased Dark Fiber Service of 12 strands terminated at the State Facility (please note that this leasing arrangement is separate to the State IRU for 36 fibers on all routes for which the State pays for construction).

The State seeks pricing quoted as monthly recurring costs, with pricing for the Leased Dark Fiber Service inclusive of fiber maintenance and operations.

For both the Leased Lit Fiber Transport Service (Layer 2 or Layer 3) and the Leased Dark Fiber Service, the service should be as resilient as possible at the physical fiber layer, meaning that the service should be capable of taking alternative pathways (virtual for the Leased Lit Fiber Transport Service or physical for the Leased Dark Fiber Service) to minimize the interruption of service from a single equipment failure or a single fiber cut.

All solutions must terminate service or infrastructure in the demarcation point at each address. Solutions bringing service to the property line but not to the demarcation point are not acceptable. Bidders must specify specific demarcation setup included in base fees, e.g., wall-mounted CPE and CAT6a handoff, rack mount patch panel, etc.

2. **New Construction:** OSIT anticipates that there will be significant new fiber construction required to reach some of the State Facilities.² OSIT's expectations and assistance for these new construction routes is as follows:
 - a. **Dark fiber routing to benefit last mile deployment:** Bidders are encouraged to route dark fiber paths in manner that allows them to serve surrounding residential and businesses with commercial broadband service. The State has prioritized linking responses to this RFP to serve State Facilities with improved residential and business broadband service throughout the State and particularly in unserved areas (areas currently lacking 25Mbps download and 3Mbps upload), underserved areas (areas currently lacking 100Mbps download and 20Mbps upload).
 - b. **Granting of an IRU to the State:** The State's willingness to assist with one-time construction charges is tied to the State being granted access to a 30-year, 36 strand IRU on all portions of the fiber constructed with State funds under this RFP. The 30-year IRU must include routine maintenance and operations costs. This IRU will be provided to the State in consideration of the funding for construction; it is separate from and in addition to the Leased Lit Fiber Transport Service (Layer 2 and Layer 3) or Leased Dark Fiber Service for the State Facility, which will be paid for based on the service fees proposed by bidders in response to this RFP.³
 - c. **Construction specifications and permitting assistance:** OSIT intends to assist winning Bidders with coordination with the Nevada Department of Transportation, the Bureau of Land Management, the Bureau of Indian Affairs, sovereign Tribal Governments, the Environmental Protection Agency, the State Historic Preservation Office and other regulatory and permit granting agencies in order to facilitate permitting and review processes for these new construction routes.

² Fiber construction specifications and standards are appended to this RFP as Appendix A.

³ The required IRU is appended to this RFP as Appendix B.

- d. **Progress Payments** – The State, subject to agreement with the Awardee for each project, has plans to make progress payments during the construction phase of the project. Progress payments will be tied directly to the provider achieving certain engineering, design, permitting, outside plant procurement and construction milestones. Details on progress payments will be outlined in the agreement between the Awardee and the State. Progress payments are subject to section V. G. of this RFP (Payment for Construction and State Security Interests in Assets).
3. **E-rate and Rural Healthcare Fiber Special Construction:** The list of Z locations contains Schools, Libraries, and Rural Healthcare Provider (“Applicant”) locations that are eligible for special construction⁴ and monthly recurring service cost reimbursements under the Federal Communications Commission’s E-rate and Rural Healthcare Programs.
 - a. Special construction and service eligibility for reimbursement have changed starting funding year 2016. See the Federal Communications Commission E-rate modernization order 2 (WC Docket No. 13-184) (<https://www.fcc.gov/document/fcc-releases-order-modernizing-e-rate-21st-century-connectivity>) for more information.
 - b. Special construction charges eligible for E-rate Category One and for Rural Healthcare Program Consortium filing reimbursement support consist of three components:
 - i. construction of network facilities
 - ii. design and engineering
 - iii. project management
 - c. If no new fiber is being installed, then any installation costs are considered standard non-recurring costs (NRC). For leased lit fiber solutions requiring special construction, this means that the costs associated with building the fiber are considered special construction and the costs associated with the equipment required to activate the service are a standard NRC.
 - d. Excess fiber strands for special construction projects
 - i. To the extent that the winning vendor installs additional strands of fiber for future business ventures, the winning vendor assumes full responsibility to ensure those incremental costs are allocated out of the special construction charges to the district in accordance with FCC rules and orders.
 - ii. If, after the issuance of the FCDL, USAC or the FCC determines that the winning vendor did not cost allocate those charges associated with the additional strands,

⁴ In E-rate and Rural Healthcare Program terminology, “special construction” refers to the upfront, non-recurring costs associated with the installation of new fiber to or between eligible entities.

Applicant will not be responsible for reimbursing the winning vendor and the winning vendor will assume all responsibilities deemed ineligible by USAC.

- iii. For examples of cost allocation, please Appendix D, a guidance document prepared by the State E-rate Coordinators' Alliance (SECA).

B. Leased Lit Fiber Transport Service-Layer 2 or Layer 3

This RFP seeks bids for Leased Lit Fiber Transport (Layer 2 and Layer 3) Services that do not include ISP service but rather provide private WAN connections.

The services will connect to the State's existing Wide Area Network through the A location of the circuit.

The connection through which the State facility (Z location) gains access to the designated State A location or State Hub is not dictated by the RFP. Bidders can route the connection through an existing or new hub and are encouraged to make the determination based on how the facilities can be used to provide nearby residential and business locations with enhanced last-mile service.

The connection between the Z (State Facility) location and the hub (A location) must be a private point-to-point connection over an all-fiber infrastructure. The RFP requires dedicated, private, symmetrical transport bandwidth of 1G or 10G between the A and Z locations.

Contract options are requested for 60-month and 84-month terms of service with at least five one-year optional renewals. Please use the pricing sheet in Appendix C to submit your cost proposal.

One-time construction costs, monthly recurring cost, and any additional non-recurring costs must be broken out and listed separately.

Bidders are free to propose alternate pricing terms provided they have also included pricing in the requested format.

C. Leased Dark Fiber Service

This RFP seeks bids for four strands of single-mode dark fiber between the A location and the Z location. The dark fiber can be routed through an existing bidder interconnect facility, particularly if routing the dark fiber path through the bidder hub is essential to serving nearby residential and business locations with enhanced last-mile service.

It is assumed that the dark fiber network is part of a more comprehensive fiber infrastructure of the bidder. The bidder will include only the portion of maintenance that is required to support the State's fiber segments versus overall network maintenance.

Contract options are requested for 60-month and 84-month terms of service with at least five one-year optional renewals. Please use the pricing sheet in Appendix C to submit your cost proposal.

One-time construction costs, monthly recurring cost, and any additional non-recurring costs must be broken out and listed separately.

Bidders are free to propose alternate pricing terms provided they have also included pricing in the requested format.

D. Service Specifications for Leased Lit Fiber Transport Service (Layer 2 or Layer 3) and Leased Dark Fiber Service

For all proposals, bidders must agree to the following service specifications:

1. **Network operations center:** Service will include customer support functions including problem tracking, resolution and escalation support management on a 24x7x365 basis. Customer has the right and is encouraged to call concerning any problems that may arise relative to its connection with Vendor-provided services.
2. **Trouble reporting and response:** Upon interruption, degradation or loss of service, Customer may contact Vendor by defined method with a response based on trouble level. Upon contact from the Customer, the Vendor support team will initiate an immediate response to resolve any Customer issue. Customer will receive rapid feedback on trouble resolution, including potential resolution time.
3. **Escalation:** In the event that service has not been restored in a timely manner, or the Customer does not feel that adequate attention has been allocated, the Customer can escalate the trouble resolution by request. A list of escalation contacts will be provided when the implementation schedule is completed.
4. **Resolution:** The Customer will be notified immediately once the problem is resolved and will be asked for verbal closure of the incident.
5. **Trouble reporting, escalation and resolution:** A detailed trouble reporting, escalation and resolution plan will be provided to the State.
6. **Reports:** Upon request, an incident report will be made available to the Customer within five working days of resolution of the trouble.

V. Special Considerations Associated with Construction Funded to Support Proposed Services

The following are requirements specific to projects for which the Bidder requests State funds for fiber construction. For winning bids of this sort, the State anticipates using SLFRF funds provided to Nevada by the federal government under ARPA; as a result, a wide range of federal reporting and other requirements apply and all awardees will be obligated to comply with the federal requirements.

A. Period of Performance

Under federal law, all SLFRF funds must be expended by December 31, 2026. As a result, funded construction projects must reach substantial completion before December 31, 2026. Substantial completion is defined by Treasury as the date for which the Project can fulfill the primary operations that it was designed to perform, delivering services to end-users. At substantial completion, service operations and management systems infrastructure must be operational.

Please note however that OSIT has requested delivery dates of December 30, 2023 for circuits under this RFP. OSIT will work with providers to determine actual delivery dates but in no case can a delivery date for a circuit exceed December 31, 2026.

B. Eligible Project Costs

For purposes of construction funded under this RFP, allowable costs are determined in accordance with the cost principles identified in 2 C.F.R. Part 200, Subpart E. Federal funds committed to an award may only be used to cover allowable costs incurred during the period of performance and for allowable closeout costs incurred during the closeout process. Please refer to the Department of the Treasury's guidance for the SLFRF for additional information on eligible costs.

C. Participation in Relevant Federal Programs

Bidders for construction funds must commit that they will participate in the Federal Communications Commission's (FCC's) broadband mapping effort and will submit regular updates as requested by the FCC. Furthermore, Bidders must commit that they will provide to OSIT the same mapping data they provide to the FCC and that they will work with OSIT to develop mutually-agreeable data-sharing protections as necessary.

In addition, Bidders that serve residential customers must commit that they are or intend to become participants in the FCC's Affordable Connectivity Program ("ACP") before offering last mile service to residential customers that utilize the newly constructed routes funded by SLFRF.

D. Labor and Workforce Considerations

The State of Nevada expects that awardees will incorporate high labor standards offer strong wages and benefits and include local hire provisions. Furthermore, the State of Nevada, in alignment with the U.S.

Department of the Treasury, intends to prioritize applications for construction support from companies who can demonstrate the following:

- Their workforce meets high safety and training standards, including professional certification, licensure, and/or robust in-house training.
- They prioritize hiring of Nevadans, including from historically disadvantaged communities.
- Policies and practices are in place to ensure contractors and subcontractors meet high labor standards. The following are some of the ways companies can demonstrate they meet high labor standards. Companies may also provide other evidence they meet high labor standards.
 - Direct employment of the workforce
 - Paying prevailing wages and benefits to workers
 - Employing a project labor agreement and a labor peace agreement
 - Hiring locally
 - Employing policies and practices to avoid worker misclassification
- No recent violations of Federal and State labor and employment laws

The State of Nevada and the U.S. Department of the Treasury will seek information from awardees on their workforce plans and practices related to construction funded with SLFRF funds, as well as similar information regarding their contracted and subcontracted entities.

E. IRU Agreement and Terms and Conditions

A Bidder selected for construction funding through this program that wishes to accept the award must execute the award program terms and conditions, as well as the IRU agreement appended in Appendix B, within 30 days of award announcements. The State of Nevada will not accept proposed changes or amendments to the terms and conditions or the IRU. Failure or refusal to comply with this requirement will result in award funds being rescinded.

F. Federal Reporting and Oversight

Bidders awarded funding for construction under SLFRF will be subject to all reporting requirements as set forth by the State and U.S. Department of the Treasury. Further, Bidders awarded funding under SLFRF will be subject to audit or review by the Treasury Inspector General and Government Accountability Office.

Projects funded through this effort must comply with all applicable Federal laws and regulations, and with all requirements for State, local, and Tribal laws and ordinances to the extent that such requirements do not conflict with Federal laws.

G. Construction Phases, Verification, and Payment for Construction

For all awarded bids, OSIT and the successful Bidder will mutually divide the construction elements of the bid into distinct components that align with the phases of construction (“Construction Phases”). The Bidder will be required to complete each of the Construction Phases in a timely fashion on a schedule mutually agreed by OSIT and the Bidder and incorporated into the award agreements.

All payments for construction of fiber facilities under this RFP will be made on a reimbursement basis in accordance with completion of each Construction Phase and demonstration of technical capabilities of the new facilities. The engineering and design effort at the beginning of a project can be considered one of the Construction Phases for purposes of Bidder compliance and payment.

Payment will not be made for any Construction Phase until appropriate documentation has been received and verified. A Construction Phase shall be deemed “complete” when end-to-end attenuation, end-to-end signature and splice testing for the Construction Phase’s outside plant fiber is completed, and test results that utilize the template format in Appendix H have been submitted to OSIT and reviewed and accepted by OSIT. Unless otherwise specified by the OSIT, if the Bidder does not complete a Construction Phase by the agreed deadline, OSIT may withhold further payments.

Construction reimbursement will be based on a showing by the successful Bidder of the construction and activation of the new fiber facilities for each Construction Phase. Among other items, awardees will be required to provide documentation of expenditures, as-built maps of new fiber infrastructure, and OTDR test data of fiber per the template in Appendix H.

OSIT may, prior to disbursement of funds, choose to inspect and/or test all new facilities itself to verify completion and successful Bidders will be required to facilitate such inspection and/or testing by OSIT.

In the event that OSIT and the successful Bidder include the engineering and design phase of a project as a Construction Phase, reimbursement will be based on OSIT’s review of the awardee’s design documentation.

VI. State Security Interests in Assets

OSIT anticipates that the State of Nevada will maintain a security interest in the new conduit and fiber assets, as well as any intellectual property or materials procured with State funds, until after construction is complete and OSIT has inspected and tested the new facilities and verified that all Construction Phases are complete. At that time, all ownership will be transferred to the awardee, subject to the State’s long-term IRU for 36 fibers.

VII. Proposal Evaluation Criteria

For all proposals submitted in response to this RFP, OSIT will undertake a two-part evaluation:

First, OSIT will consider whether the proposal meets the threshold criterion for review (Table 1) that the solution in the proposal meets the requirements of the RFP. All proposals must meet that threshold criterion for consideration by OSIT for funding.

Second, those applications that meet the threshold criterion will advance to substantive review and will be evaluated based on the proposal evaluation criteria in Table 2.

TABLE 1 — THRESHOLD CRITERION FOR ALL APPLICATIONS: PROPOSED SOLUTION MEETS THE REQUIREMENTS OF THE RFP

| Criterion: Whether the proposed solution meets the requirements of the RFP | Has threshold criterion been met? |
|--|-----------------------------------|
| <ul style="list-style-type: none"> • Does the proposal demonstrate adherence to the facility service, types of services proposed and other terms, and conditions of OSIT and the State? • Does the proposal provide adequate and complete responses to all information requested in the RFP in the format specified? • Does the proposed solution clearly address all of the technical requirements of the RFP, including but not limited to network design, construction plan and timelines, and business, marketing, and progress reporting to OSIT and local government? • Does the proposal affirm agreement with all certifications | Yes/No |

TABLE 2 — EVALUATION CRITERIA FOR THOSE PROPOSALS THAT MEET THRESHOLD CRITERION

| Criterion | Weight |
|--|--------|
| Cost to the State of Nevada, including both recurring and one-time costs | 30% |
| Demonstrated performance and associated references for comparable projects, both within and outside Nevada, for similarly sized projects <ul style="list-style-type: none"> • Does the proposal include descriptions of comparable projects of similar size completed by the Bidder, including the required number of references? • Does the track record of the Bidder provide confidence of successful project delivery? | 20% |
| Capabilities and capacity <ul style="list-style-type: none"> • Does the proposal clearly describe the use of both Nevada-based employees and contractors that will work on the project? • Does the proposal demonstrate the expertise, experience, and availability of Nevada-based key personnel and key contractors? | 20% |

| Criterion | Weight |
|---|--------|
| <ul style="list-style-type: none"> Does the experience and work history of the proposed personnel and contractors provide confidence of successful project delivery? | |
| <p>Potential to improve residential broadband service in portions of the State that are unserved (lacking 25/3 service) or underserved (lacking 100/20 service)</p> <ul style="list-style-type: none"> Does the proposal demonstrate how an award will support improved residential broadband service in unserved and underserved areas? Does the proposal demonstrate how an award may support improved broadband in low-income multi-dwelling housing facilities? | 5% |
| <p>Labor considerations and plans to hire and train Nevada workers</p> <ul style="list-style-type: none"> Does the proposal demonstrate planning for how Nevada companies and workers will be used to execute the project? Does the proposal demonstrate planning for training of Nevada workers, including a commitment to work on training programs in partnership with the State as feasible? Does the proposal demonstrate planning for application of fair labor standards per State and federal public policy? | 25% |

VIII. Required Response Format

All Bidders are requested to provide the following information. Please use the format and order of questions and information requested and number your response.

A. Bidder Information

1. Bidder’s Name and Address
2. Bidder’s Website
3. Bidder’s State of Nevada Vendor ID Number⁵

⁵ <https://controller.nv.gov/Buttons/VendorDB/>

4. Bidder's Federal Employer Identification Number
5. Bidder's SAMS Number/ Unique Entity Identifier (UEI)
6. Bidder's SAM.gov expiration date
7. Bidder's Universal Service Service Provider Identification Number (SPIN)
8. Contact Name and Title
9. Contact Email and Phone Number
10. Authorized Representative (person with authority to execute contracts with the State of Nevada) Name and Title
11. Authorized Representative Email and Phone Number
12. Bidders must be registered to conduct business in the State of Nevada at the time of application. Please include in your application a copy of the organization's current certification from the Nevada Secretary of State's Office.

B. Criteria for Meeting Threshold Requirements: Technical Sufficiency, Project Design, and Implementation Plan

The following are the criteria for meeting proposal threshold requirements. Please provide the following data so that OSIT may evaluate whether your proposal meets threshold requirements and can proceed to the scoring phase of review. Please respond to every question individually and number your response.

1. Describe the proposed project including a general overview of the project, responsibilities of participants, and unmet community needs your project will address.
2. If applicable, describe any partnerships or collaborations formed to create this application (e.g., two or more providers partnering to serve an eligible project area).
3. Provide a technical narrative overview of the proposed solution, including engineering, construction, permitting, equipment installation, and other technical considerations.
4. Provide a network diagram displaying the network topology and the fiber routes that will be used to connect State Facilities (can be marked as confidential).
5. Provide the proposed project timeline, including start date, end date, and all key milestones.
6. Describe the planned cadence and content of updates from the Bidder to OSIT during the construction phase of the project.
7. Describe the planned cadence and content of updates from the Bidder to OSIT once the funded infrastructure is operational. Include the proposed dashboard of network

operations statistics that the Bidder will share with OSIT or its designee on a monthly basis, including:

- Number of service tickets opened
- Mean time to resolution of tickets
- Statistics to track the performance of the network against the SLA standards
 - Uptime
 - Latency on all links
 - Jitter
 - Packet loss
- Service impacting outages
- Time to resolution of service impacting outages

C. Capabilities and Competencies

1. Please provide background information on your organization including the year the organization was founded, how many years the organization has been providing broadband service in total and in Nevada specifically, a history of the types of technology that the organization has deployed, and the types and numbers of customers the organization currently serves in Nevada.
2. Describe your organization's experience with projects of similar size and scope to the one proposed here. Please provide at least three references for projects of similar size and scope to the one proposed here. Provide references for both Leased Lit Fiber Transport Service (Layer 2 or Layer 3) and Leased Dark Fiber Service.
3. Describe your organization's capability to implement the proposed project and the competencies of the staff assigned to the project to include the financial management of funding. Detail the level of support for the project, as well as the expertise of the individual(s) who will be responsible for managing the project.
4. Provide resumes of key staff, including at minimum the staff that will oversee each of the following:
 - Financial management
 - Federal and State reporting
 - Marketing and community outreach
5. Describe how you will:
 - Monitor implementation and achievement of objectives

- Ensure project and fiscal accountability
 - Comply with applicable federal and State requirements
5. Provide names and company backgrounds of your planned engineering, construction, and maintenance contractors. Please provide resumes for key personnel. Please note that a preference exists for the use of Nevada-based companies and workers where feasible.
 6. Has your organization previously been awarded federal or state loans or grant funding to build broadband infrastructure?
 - If yes, please describe.
 - If yes, was the award rescinded or suspended at any point due to lack of compliance or performance?
 - If yes, please describe.

D. Labor, Training, and Workforce

The State of Nevada understands that a skilled and qualified workforce is essential to meeting its universal access goals and to the success of the High Speed Nevada Initiative, including meeting infrastructure buildout timelines and ensuring high-quality work is performed. Please respond individually to the following items and number the items in your response:

1. Indicate whether the workforce will be directly employed or whether work will be performed by a subcontracted workforce. If the workforce is subcontracted, please provide a response to questions 2 through 6 below for each subcontractor.
2. Please provide in a table format: the total number of FTE positions organized by job title and employer, including for contractors and subcontractors, required to carry out all work over the course of the project.
 - For each job title, indicate what percentage of the workers will be from Nevada.
 - For each job title, provide the applicable wage scales.
 - For each job title, provide the applicable overtime payment practices.
 - For each job title required to carry out the proposed work (including contractors and subcontractors), provide a description of safety training, certification, and/or licensure requirements (e.g., OSHA 10, OSHA 30, confined space, traffic control, or other training as relevant depending on title and work).
3. For each training, certification, or licensure, describe where and how the necessary training, certification, or licensure is provided or obtained, including whether training is provided in-house, by contract, or if employees are expected to obtain the training, certification, or licensure on their own.
4. Describe how the Bidder will ensure the use of an appropriately skilled workforce.

5. Describe how the Bidder will ensure that all members of the project workforce will have appropriate credentials and licensure.
6. Describe how the Bidder, and all its subcontractors, will ensure proper workplace safety and that all members of the project workforce are authorized to and understand how to raise health and safety concerns in connection with the completion of the project.
7. Describe any employee development programs that assist workers progress along a career path to higher wages and higher skilled positions.
8. Indicate whether the workforce is unionized.

The State likewise understands that workforce development and training are critical elements of a skilled and qualified workforce. The State has an interest in providing training to Nevadans who are interested in all elements of this work, including operations, engineering, construction, and maintenance. Please respond individually to the following items and number the items in your response:

9. Describe your understanding of the adequacy of Nevada's workforce generally and whether a workforce shortage exists. Discuss specific job titles.
10. Describe your plans for ensuring you have an adequate workforce to execute on your proposal and any concerns you have in that regard.
11. Please also describe both existing and planned in-house training programs to ensure that projects are completed at a high standard.
12. Describe whether you would be interested in working with the State to develop general industry workforce training programs.

E. Pricing Schedule

A pricing schedule is appended to this RFP as Appendix C and must be completed and provided as part of the bid. The following are guidelines for completing the pricing schedule:

- You must bid all State and Local Facilities in an Eligible Service Area.
- You must bid both Leased Lit Fiber Transport Service (Layer 2 and Layer 3) and Leased Dark Fiber Service for all State and Local Facilities within an Eligible Service Area.
- You must bid all bandwidth levels and terms for Leased Lit Fiber Transport (Layer 2 and Layer 3) Services.
- You must bid all terms (length of lease) for Leased Dark Fiber Service.

F. Project Costs and Financial Plan

All bidders are required to complete Appendix C. If you are also requesting funds to construct fiber to provide these services, please complete all special construction/one-time construction costs sections in Appendix C and also provide responses to each of the following items and number each item in your response:

1. Please describe the total project cost, the total amount of construction funds being requested, and the matching funds you are providing toward fiber construction.
2. Please provide a detailed budget for the construction project you are proposing, together with a budget narrative and supporting documentation. (Note: a budget narrative explains or justifies the estimated costs by line item or category in the budget. Your budget narrative should explain how the costs associated with each line item or category in your budget relate to your implementation of the project). To demonstrate the reasonableness of your budget proposal, the budget items and project costs should be verified through original source documents, architectural and engineering reports, and/or certified appraisals.
3. Please provide a detailed discussion of your expectations and projections for operations, sales, and revenues of the new facilities in the Eligible Project Area. Please demonstrate in this section the financial viability of the project over time and that the State funding for construction, if awarded, will result in deployment and operations of network infrastructure in the long run.

G. Construction Detail

For all proposals seeking funding for construction, please provide the following information and number your response:

1. Name and resume of the project manager who will oversee the fiber construction
2. A list of the permits, easements (including private easements) and regulatory approvals necessary to complete the construction and the Bidder's approach to securing these permits and approvals
3. The engineering firm(s) that will design the fiber network, brief (less than 250 words) statement of qualifications, the primary point of contact, and website
4. The construction firm(s) that will construct the fiber, brief (less than 250 words) statement of qualifications, the primary point of contact, and a website
5. A detailed construction narrative outlining the engineering, design, project management, and construction of the project. The narrative should address:
 - a. Outline of the buried and/or aerial portions of the right of the proposed route.
 - b. Outline for the aerial sections the process the Bidder will follow to secure pole attachment rights from pole owners and an estimate of the time and cost of performing make-ready
 - c. The current anticipated route in a GIS shapefile or KMZ file
 - d. The anticipated number of crews that will be used to construct the route
 - e. The process for order, receipt, inspection and storage of all outside plant materials
 - f. Any permitting, supply chain, labor or other challenges that the Bidder anticipates

could delay the construction of the route

- g. If the Construction firm is a separate entity from the proposer, a statement on letterhead and signed by the authorized representative from the construction company that indicates adherence to the labor standards outlined in the RFP.
6. A detailed timeline that includes estimated dates for the completion of each of the following:
 - a. Engineering and design
 - b. Permitting
 - c. Materials and/or contractor procurement
 - d. Construction
 7. The plan to extend the fiber to serve nearby residential and business customers, either through your organization alone or with partners

H. Certifications

Please provide confirmation, in writing and signed by your organization's authorized representative, of the following:

1. I confirm the accuracy of all information provided in this application. Initial _____
2. I confirm that my organization has reviewed, understands, and accepts all pages of the RFP, including appendices, and that the organization provides this proposal based on its review, understanding, and acceptance of the content of the RFP. Initial _____
3. I confirm that, in developing proposed pricing for this proposal, my organization has undertaken the appropriate site surveys and other field work and planning. I further confirm that the pricing proposed in my organization's proposal is accurate, sufficient, and binding. Initial _____
4. I confirm that my organization will provide the most recent two years of audited financial statements inclusive of balance sheet and any other financial information which could include cash flow projections, break even analysis, schedules of existing debt, etc. if requested by the State of Nevada. Alternatively, I may choose to provide to the State of Nevada a letter from a CPA firm certifying that my organization has the financial capacity to undertake the proposed project. Initial _____

5. I confirm that my organization is not currently suspended or debarred by any Federal Department or Agency from participating in Federal Funded Contracts and is not in default of any public grant or loan program. Initial _____

6. I confirm that all parts of new infrastructure constructed with funds through this bid will be made available for use and for interconnection on non-discriminatory terms and conditions as soon as is practically feasible. I further confirm that my organization will offer to all qualified entities the same non-discriminatory rates for lit transport service, dark fiber leasing, and interconnection site access and rack rental. I further confirm that, in the event the State of Nevada awards additional middle-mile awards in the future, my organization will offer such non-discriminatory rates and interconnection opportunity to awardees of that funding. Initial _____

7. I confirm that my organization understands that awards are likely to involve a range of reporting and data-sharing obligations under federal rules associated with the funds used for this effort. I confirm that, upon request of the State of Nevada, my organization will promptly provide any information requested as part of either a State or U.S. Treasury review of the project and will support the State of Nevada in its reporting obligations to the U.S. Treasury. Initial _____

8. I confirm that my organization and all proposed subcontractors are compliant with federal labor and employment laws and certify that I have disclosed any instances in which my organization or any subcontractors have violated laws such as the Occupational Safety and Health Act, the Fair Labor Standards Act, or any other applicable labor and employment laws for the preceding three years. Initial _____

9. I confirm that my organization is willing to provide residential broadband service or partner with another organization to offer residential broadband service in nearby unserved and underserved communities should my organization receive future funding from the State for last-mile infrastructure deployment. Initial_____

Appendix A. Fiber Construction Standards

Material Requirements

- Material will comply with those standards as established by Underwriter's Laboratories (UL), National Electric Manufacturer's Association (NEMA) or relevant industry standards and shall be commercial grade. All materials will be new and free from defects.
- Selected contractor and its subcontractors will provide all material management to ensure that the project remains on track according to the project milestones,
- All due caution will be exercised in transporting and off-loading all materials to prevent any damage during shipping or placement. Any damage to any materials after their initial receipt and inspection by the Bidder will be the sole responsibility of the Bidder, who will replace such damaged handholes at no additional expense to the State.
- On buried routes all buried conduit shall be multi-duct with at least three innerducts. Each conduit shall be equipped with a graduated pull tape or rope.
- All in-building installation shall comply with local code and the requirements of the facility owner.
- proposal buried routes, unless specified by right-of-way owner, crossings will be two conduits, Sch 40 or better.
- On buried routes, the exact requirements for location and type of conduit within the building shall be verified with building owner.
- On buried routes, all handholes shall be Nevada DOT approved, 45,000 lb. load rated CDR or comparable enclosures on roadways and railways, and pedestrian rated handholes for non-roadways and non-railways.
- If a buried proposal, large-radius sweeps shall be provided where required for offset or change in direction of conduit. Bend radius rating of the cable must be adhered to for all conduit bends, pull boxes, and handholes.
- Fiber must be single-mode with the following specifications:
 - Single-mode G.652 ITU standard for any existing fiber leveraged for the project
 - Single-mode G.652D ITU standard or better for any fiber constructed for the project
 - For single-mode fiber, the loss for an OTDR tests must be
 - 0.5 dB per km for 1310 nm or less
 - 0.4 dB per km for 1550 nm. (1.0 dB/km for premises/0.5 dB/km at either wavelength for outside plant max per EIA/TIA 568); this roughly translates into a loss of 0.1 dB per 600 (200m) feet for 1310 nm, 0.1 dB per 750 feet (250m) for 1300 nm
- Connector types shall be SC-APC unless otherwise specified

Specifications

Survey

- Comply with all ordinances and regulations. Where required, vendor will secure permits before placing or excavating in the right-of-way, in easements, on private property, crossing streams, pushing pipe or boring under streets and railways. Pre-survey shall be done prior to each job.
- If a buried proposal, the Bidder will be responsible for locating underground lines of third parties in cable route area.

Permits and Traffic Control

- The Bidder must adhere to all applicable laws, rules and requirements and must apply for permits to place infrastructure per specification per county or city ordinance applicable to where the infrastructure is being placed.
- All traffic control, in accordance with local, state, county, or permitting agency laws, regulations, and requirements, will be the Bidder's responsibility. The Bidder's construction schedule will take into consideration sufficient time for the development and approval of a traffic control plan.

Tracer Wire Installation

- If a buried proposal, tracer wire shall be placed with all conduit installed unless armored or traceable cable is used. The Bidder will provide the tracer wire and shall install, splice and test (for continuity) the tracer wire. If the tracer wire is broken during installation, the wire should be repaired and tested for continuity after repair.
- If a buried proposal, for multi-duct installation, install a 5/8" X 8" copper clad ground rod in the hand-hole located on public right-of-way. Place a #12 insulated copper locate wire from the ground rod to the fiber optic termination room or to the outside of the building directly below the pull box and terminate on one side of an insulated indoor/outdoor terminal block to the master ground bar in the fiber optic termination room or place a ground rod on the outside of the building. Locate block in an accessible location. This is for "locate purposes only," not for grounding purposes. Note on as-built where ground is placed and tag located wire as "locate wire."

Depth of Burial (If a buried proposal)

- Except where otherwise specified, the cable shall be placed to a minimum depth of 24" along roadways and 18" on private property. Greater cable depth will be required at the following locations:
 - Where cable route crosses roads, the cable shall be placed at a minimum depth of 48" below the pavement or 36" below the parallel drainage ditch, whichever is greater,

unless the controlling authority required additional depth, in which case the greatest depth will be maintained.

- Where cable crosses existing sub-surface pipes, cables, or other structures: at foreign object crossings, the cable will be placed to maintain a minimum of 12" clearance from the object or the minimum clearance required by the object's owner, whichever is greater.

Highway, Railroad, and Other Bored Crossings (If a buried proposal)

- All crossings of state or federal highways and railroads right-of-way shall be made by boring and placing a pipe casing. The cable shall be placed through the pipe casing. Country road and other roadways shall be bored, trenched, or plowed as approved by the NV DOT or the appropriate local authority.
- All work performed on public right-of-way or railroad right-of-way shall be done in accordance with requirements and regulations of the authority having jurisdiction there under.
- Bidder shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn.
- Where the cable route crosses railroad right-of-way, the cable shall be placed at a minimum depth of 60" below the railroad surface or 36" below the parallel drainage ditch, whichever is greater, unless the controlling authority requires additional depth, in which case the greatest depth will be maintained.

Cable Markers (If a buried proposal)

- Cable markers shall be placed within 48 hours of cable installation. Unless the right-of-way or property owner specifies otherwise, cable markers shall be placed at all change in directions, splices, fence line crossings, at road and stream crossings, and other points on the route not more than 1,000 feet apart.
- In addition, on highway right-of-way, the markers shall be located at the highway right-of-way line. Markers shall always be located so that they can be seen from the location of the cable.

Handholes (If a buried proposal)

- Handholes will be placed in accordance with standard industry practice following the specifications provided in the construction plans, typical drawings, and detail drawings. Special attention and planning must be exercised to ensure accessibility by other groups after construction has been completed.
- All handholes unless otherwise stipulated by the drawings will be buried with 12" to 18" of cover at final grade.

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- Immediately after placement, the soil around and over the handhole will be tamped and compacted. Should any washouts occur, the Bidder will be responsible for correcting the problem immediately without additional cost.
- After cable placement, all ducts will be sealed.
- All splice handholes/manholes will be grounded
- A minimum of 100' coil of cable shall be left in each handhole/building for splicing use.

Splicing (both buried and aerial)

- Fiber-to-fiber fusion splicing of optical fibers at each point including head ends is required.
- Complete testing services, such as end to end, reel testing, and splice loss testing, ORL, power meter/laser source testing and WDM testing is required.
- Individual splice loss will be 0.10 dB for single-mode unless after 3 attempts these values cannot be achieved, then the fibers will be re-spliced until a splice loss within 0.05 dB of the lowest previous attempts is achieved. Splice loss acceptance testing will be based on the fusion splicer's splice loss estimator.
- All cables to buildings shall be fusion spliced within a minimum of 50' of entering a building at a location to be determined by the owner with an existing single-mode fiber and terminated at customer's rack.

Aerial Plant

Testing Cable (both buried and aerial)

- The Bidder shall be responsible for on-reel verification of cable quality prior to placement.
- Completed test forms on each reel shall be submitted to the State.
- The Bidder assumes responsibility for the cable after testing. This responsibility covers all fibers in the cable.
- The Bidder shall supply all tools, test equipment, consumables, and incidentals necessary to perform quality testing.
- The cable ends shall be sealed upon completion of testing.
- In addition to splice loss testing, the selected Bidder will perform end-to-end insertion loss testing of single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link

loss budget.

Restoration (both buried and aerial)

- All work sites will be restored to as near their original undisturbed condition as possible, all cleanup will be to the satisfaction of the State and any permitting agencies.
- The Bidder shall provide a brief description of restoration plan in the response, with the expectation that a more detailed restoration plan will be delivered prior to construction begins.
- Work site restoration will include the placement of seed, mulch, sod, water, gravel, soil, sand, and all other materials as warranted.
- Backfill material will consist of clean fill. Backfilling, tamping, and compaction will be performed to the satisfaction of the State the representative of any interested permitting agency, and/or the railroad representative.
- The Bidder will be responsible for any restoration complaints arising within one year after final acceptance.
- Excess material will be disposed of properly.
- Debris from clearing operations will be properly disposed of by the Bidder /subcontractors as required by permitting agencies or the railroad. Railroad ties, trees, stumps or any foreign debris will be removed, stacked, or disposed of by the Bidder as per requirements by other interested permitting agencies, and/or the State
- Road shoulders, roadbeds, and railroad property will be dressed up at the end of each day. No payment for installation will be permitted until cleanup has been completed to the satisfaction of the any permitting agencies, and/or the State
- Site clean-up will include the restoration of all concrete, asphalt, or other paving materials to the satisfaction of the other interested permitting agencies, and/or the State

Documentation (both buried and aerial)

As-built drawings will be in digital format specified by the State and shall include:

- Fiber cable routes
- site drawings,
- permit drawings:
- Electronically installed, consolidated field notes
- Splicing locations
- Optical fiber assignments at patch panels

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- Optical fiber assignments at splice locations
- Installed cable length
- Date of installation
- Aerial installation documents shall include
 - Pole attachment inventories
 - Pole attachment applications
 - Pole attachment agreements between the Bidder and other utilities
 - GPS points of reference for utility poles
 - Photo images of poles to which fiber is attached
- Underground installation documents shall include
 - Conduit design and detailing
 - Manhole detailing
 - Preparation of all forms and documentation for approval of conduit construction and/or installation,
- Fiber details will include:
 - Manufacturer
 - Cable type and diameter
 - Jacket type: single-mode
 - Fiber core and cladding diameter
 - Fiber attenuation per kilometer
 - Fiber bandwidth and dispersion
 - Index of refraction
- OTDR documentation will include for 1310 nm and 1550 nm:
 - Each span tested bi-directionally from endpoint to endpoint.
 - Each span's traces shall be recorded and mapped. Each splice loss from each direction and the optical length between splices as well as any of the information required by Span Map.
 - Reel acceptance
 - Individual fiber traces for complete fiber length
 - Paper and computer disk records of all traces

- Losses of individual splices
- Anomalies
- Wavelength tests and measurement directions
- Manufacturer, model, serial number, and date of last calibration of OTDR
- Power Meter tests shall be performed at 1310 and 1550 nm and documentation shall include:
 - Total link loss of each fiber
 - Wavelengths tested and measurement directions
 - Manufacturer, model, serial number, and date of last calibration for all equipment used

References, Standards, and Codes

Specifications in this document are not meant to supersede state law or industry standards. Bidders shall note in their response where their proposal does not follow the requested specification to comply with state law or industry standard. The following standards are based upon the *Customer-Owned Outside Plant Design Manual (CO-OSP)* produced by BICSI, the *Telecommunications Distribution Methods Manual (TDMM)* also produced by BICSI, ANSI/TIA/EIA and ISO/IEC standards, and NEC codes, among others.

It is required that the Bidder be thoroughly familiar with the content and intent of these references, standards, and codes and that the Bidder be capable of applying the content and intent of these references, standards, and codes to all outside plant communications system designs executed on the behalf of the State.

Listed in the table below are references, standards, and codes applicable to outside plant communications systems design. If questions arise as to which reference, standard, or code should apply in a given situation, the more stringent shall prevail. As each of these documents are modified over time, the latest edition and addenda to each of these documents is considered to be definitive.

TABLE 3 — REFERENCES, STANDARDS, AND CODES

| Standard/Reference | Name/Description |
|---------------------------|--|
| BICSI CO-OSP | BICSI Customer-Owned Outside Plant Design Manual |
| BICSI TDMM | BICSI Telecommunications Distribution Methods Manual |
| BICSI TCIM | BICSI Telecommunications Cabling Installation Manual |
| | Customer-Owned Outside Plant Telecommunications Cabling Standard |
| TIA/EIA – 568 | Commercial Building Telecommunications Cabling Standard |
| TIA/EIA – 569 | Commercial Building Standard for Telecommunication Pathways and Spaces |
| TIA/EIA – 606 | The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings |
| TIA/EIA – 607 | Commercial Building Grounding and Bonding Requirements for Telecommunications |
| TIA/EIA - 455 | Fiber Optic Test Standards |
| TIA/EIA - 526 | Optical Fiber Systems Test Procedures |
| IEEE 802.3 (series) | Local Area Network Ethernet Standard, including the IEEE 802.3z Gigabit Ethernet Standard |
| NEC | National Electric Code, NFPA |
| NESC | National Electrical Safety Code, IEEE |
| OSHA Codes | Occupational Safety and Health Administration, Code of Federal Regulations (CFR) Parts 1910 - General Industry, and 1926 - Construction Industry, et al. |

Appendix B: State of Nevada Indefeasible Right of Use Form

The [State of Nevada Draft IRU](#) contains the terms and conditions for the 36-strand dark fiber lease the state is requiring as part of its investment in assisting Bidders with construction costs. The State is willing to consider a 30-year lease of a 2-inch empty innerduct or a 2-inch separate conduit instead of 36 strands of fiber. The terms for the lease of the innerduct or separate conduit will be roughly the same as the IRU.

Appendix C: Pricing Schedule

All Bidders must complete the [State Facilities Pricing Sheet](#). The following are guidelines for completing the pricing schedule:

- Bidders must include bids for all State Facilities within the Eligible Service Area.
- Bidders must include bids for both Leased Lit Fiber Transport Service (Layer 2 and Layer 3) and Leased Dark Fiber Service for all State Facilities within the Eligible Service Area.
- Bidders must include bids for all bandwidth levels and terms for Leased Lit Fiber Transport (Layer 2 and Layer 3) Services.
- Bidders must include bids for all terms for Leased Dark Fiber Service.

Appendix D: E-rate and Rural Healthcare Special Construction Cost Allocation

E-rate and Rural Healthcare Program Special Construction

Excess Strands - Cost Allocation Scenarios

Funding Year 2023

Prepared by the [State E-rate Coordinators' Alliance](#)

October 23, 2017

I. LEASED LIT FIBER AND LEASED DARK FIBER

A. Excess Strands for Applicant's Future Use

If the Applicant installs additional strands for the E-rate or Rural Healthcare Program Facility's (Applicant) exclusive future use in a leased dark fiber or leased lit fiber special construction project, and if The Applicant can show documentation that buying a cable containing the number of strands placed in the fiber system for The Applicant 's future use is more cost effective then buying a fiber cable with the number of strands The Applicant plans to place into service the first year, no cost allocation of the excess strands is required and no other special construction charges would need to be cost allocated.

If the Applicant installs excess strands for The Applicant 's exclusive future use in a leased dark fiber or leased lit fiber special construction project where the excess strands will remain dormant until they are lit for The Applicant in the future, and if The Applicant cannot show that it is not more cost effective than buying the exact number of fiber strands being lit in the first year, The Applicant must cost allocate the costs associated with the excess strands only. No other special construction charges would need to be cost allocated.

B. Excess Strands for Applicant's Future Use

For lit services special construction and leased dark fiber special construction, if the Applicant wishes to place extra strands in the build for its own use, the E-rate applicant must cost allocate the cost of the Applicant-owned extra strands, as well as all incremental costs of those extra strands from the special construction E-rate funding request. It is not a pro-rata share, but an incremental cost calculation that must be backed by detailed documentation.

Example 1 from Funding Year 2018 USAC Fiber Training Slides applies:

COST-ALLOCATION: FIBER EXAMPLES

- **Example 1:** Leased lit fiber or leased dark fiber provider installs 12-strands in fiber run to a large school district hub and wants to add 36 additional strands for its own ineligible use, resulting in additional labor costs (e.g., splicing) and plant costs (e.g., larger termination boards, additional handholes).

Result: Cost of 36 additional fiber strands and all associated incremental increases in costs (e.g., the additional labor/outside plant costs) above what would be incurred if only the 12-strands of fiber were installed must be allocated out of the applicant's special construction funding request.

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Applicants should seek documentation from the provider which outlines the added incremental costs attributable to designing, managing and constructing a fiber system with a 48-strand cable instead of a 12-strand cable. Such costs should include (but are not limited to):

- Splice Labor. If any fibers over The Applicant's fibers are spliced, the labor for these additional splices must be cost allocated.
- Splice Enclosures are placed to protect splices. If any fibers over The Applicant's fibers are spliced and require an enclosure, the enclosures for these additional splices must be cost allocated.
- Fiber Installation Labor. This represents the incremental cost of pulling a larger cable through the buried conduit.
- Structured materials installation. This represents the additional cost of burying a larger conduit to support the additional fibers.

Note that the costs associated with installing a larger cable strand than what is required by The Applicant are ineligible and the Applicant should not include such costs in their special construction billing to The Applicant but should be prepared to show evidence during PIA review that it did not charge The Applicant for these incremental costs.

TABLE 4 — POSSIBLE INCREMENTAL COSTS

| Item | 12-strand cable construction | 48-strand cable construction | Cost allocation amount that Applicant should remove from the special construction request |
|---|--|---|--|
| Fiber cable | 38 cents per foot | \$1.04 per foot | 66 cents per foot |
| Design and engineering | \$2.12 per foot | \$2.42 per foot | 30 cents per foot to depict additional splices at A and Z locations |
| Project management | \$1.18 per foot | \$1.18 per foot | 0 |
| Splice labor* | \$11.00 per splice | \$11.00 per splice | \$11 per splice over 12 splices at any splice site |
| Splice enclosures** | \$205 per enclosure | \$205 per enclosure | \$205 per enclosure for every enclosure over 12 |
| Fiber patch panel | \$71.43 per panel | \$218.60 per panel | \$147.17 per panel |
| Conduit and other structured materials | 1.25" conduit required \$1.95 per foot Handhole (40,000 lb. rated) \$2695 per unit Fiber Marker \$30 per unit | 1.5" conduit required \$2.35 per foot Handhole (40,000 lb. rated) \$2695 per unit Fiber marker \$30 per unit | 40 cents per foot No cost difference for handhole No cost difference per marker |
| Fiber installation labor *** | 25 cents per foot | 28 cents per foot | 3 cents per foot |
| Structured materials installation (conduit, markers, handholes)**** | \$2.85 per foot | \$3.10 per foot | 25 cents per foot |
| Markers | Place every 500' | Place every 500' | No cost difference |
| Handholes | Place every 1,000' | Place every 1,000' | No cost difference |

Appendix E: Service Level Agreement for Leased Lit Fiber (Layer 2 and Layer 3) Transport Services

All Leased Lit Fiber Transport Services shall adhere to the following Service Level Agreement (SLA) terms:52

- The awardee will make all reasonable efforts to ensure 99.96% network availability of each circuit
 - 0.25% frame/packet loss commitment
 - 25 ms round-trip network latency commitment for the leased lit fiber transport circuit measured between the Z location and the A location
 - 30 ms network jitter commitment
- The awardee may not limit or throttle the capacity of the service at any time for any reason.
- These standards are an awardee-stated commitment for fully operating service. Any degradation of service may be counted against the network availability standard.
- The awardee will provide a monthly service report and an annual service report showing aggregate statistics for:
 - Peak link usage for the quarter
 - Downtime on the link
 - Impaired performance versus SLA standards for the link
- Service Outage shall be calculated from the time the call is placed by State regarding the Outage
- Service Outage shall be defined as any service not satisfying the technical performance requirements in this RFP
- The awardee’s commitment is to respond to any outage within two hours and a four-hour restoration of service. Service credits for a greater than two-hour response will accumulate as follows:

TABLE 5 – LEASED LIT (LAYER 2 AND LAYER 3) TRANSPORT SERVICE CREDITS

| Length of Service Outage | Credit is the follow percentage of monthly fiber maintenance fee |
|---|---|
| Less than 2 hours | No credit |
| Two to four hours | 5% |
| Greater than four and less than eight hours | 10% |
| Greater than eight and less than 12 hours | 15% |
| Greater than 12 and less than 16 hours | 20% |
| Greater than 16 and less than 24 hours | 35% |
| Greater than 24 hours | 50% |

Appendix F: Service Level Agreement for Leased Dark Fiber Services

All Leased Dark Fiber Services must adhere to the following Service Level Agreement (SLA) terms:

- The awardee will make all reasonable efforts to ensure 99.99 percent network availability of all leased dark fiber strands.
- The awardee shall maintain the fiber seven days per week, twenty-four hours per day.
- In the case that maintenance is contracted to a third party, the provider still bears full responsibility to the State for adherence with the SLA.
- The awardee will respond to any outage due to a fiber cut, crimp, bend or another fiber related failure, within two hours and thereafter proceed to correct the malfunction with reasonable diligence.
- Service Outage shall be calculated from the time the call is placed by State regarding the Outage
- Service Outage shall be defined as one or more strands not satisfying the technical performance requirements in this RFP
- Service credits for a greater than two-hour response will accumulate as follows:

TABLE 6 – LEASED DARK FIBER SERVICE CREDITS

| Length of Service Outage | Credit is the follow percentage of monthly fiber maintenance fee |
|---|---|
| Less than 2 hours | No credit |
| Two to four hours | 5% |
| Greater than four and less than eight hours | 10% |
| Greater than eight and less than 12 hours | 15% |
| Greater than 12 and less than 16 hours | 20% |
| Greater than 16 and less than 24 hours | 35% |
| Greater than 24 hours | 50% |

Appendix G: Map of Eligible Service Areas

Appendix H. Test Data Template

1. OTDR Bidirectional Report (1310 nm)

OTDR Bidirectional Report

Identification Information

| | | | |
|------------|---|-----------|--------|
| Filename: | TBN_NOC_EAST_PT_110_13101550_20-05-20_1 | Cable ID: | |
| Test date: | 11/27/2020 | Fiber ID: | PT_110 |
| Test time: | 2:14:14 AM (GMT-05:00) | Customer: | |
| Job ID: | TBN_NOC_EAST;MDBC_Brown_TBN_PNL | Company: | |
| Comments: | ;BB=VIOLET; MDBC=PT_002 | | |

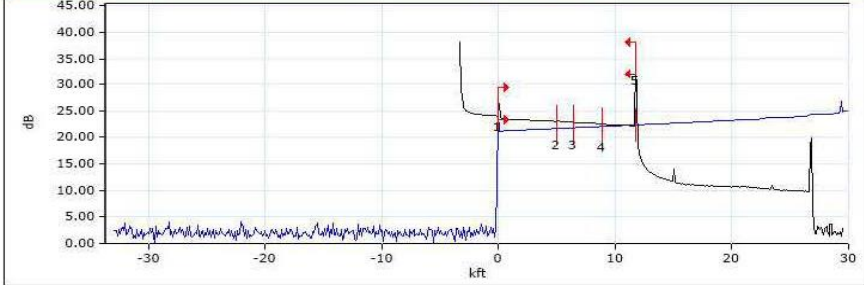
| Location A | | Location B | |
|-------------------|------------------------|-------------------|------------------------|
| Location: | | Location: | |
| Operator: | DH | Operator: | |
| Unit model: | FTB-720-12CD-23B-EI-EA | Unit model: | FTB-720-12CD-23B-EI-EA |
| Unit s/n: | 737962 | Unit s/n: | 737962 |
| Calibration Date: | 1/15/2014 | Calibration Date: | 1/15/2014 |

| Test Parameters | A->B | B->A | Test Settings | A->B | B->A |
|------------------------|---------|---------|--|----------|----------|
| Wavelength (nm): | 1310 | 1310 | IOR: | 1.467700 | 1.467700 |
| Fiber Core Size (μm): | 9 | 9 | Backscatter (dB): | -79.45 | -79.45 |
| Range (kft): | 32.8084 | 65.6168 | Helix Factor (%): | 0.00 | 0.00 |
| Pulse (ns): | 100 | 100 | Splice loss detection threshold (dB): | 0.020 | 0.020 |
| Duration (s): | 30 | 30 | Reflectance detection threshold (dB): | -72.0 | -72.0 |
| | | | End-of-fiber detection threshold (dB): | 5.000 | 5.000 |

Results (1310 nm)

| | | | | | |
|------------------------|---------|------------------------|-------|------------------------|-------|
| Span length (kft): | 11.7485 | Span loss (dB): | 1.247 | Span ORL (dB): | --- |
| Average loss (dB/kft): | 0.106 | Avg. splice loss (dB): | 0.021 | Max. splice loss (dB): | 0.055 |

Graphic (1310 nm)



Event Table (1310 nm)

| Type | No. | Location/Length (kft) | Average Attenuation (dB) | Average Loss (dB) | Cumulative Loss (dB) | Loss A->B (dB) | Loss B->A (dB) |
|----------------|-----|-----------------------|--------------------------|-------------------|----------------------|----------------|----------------|
| Reflective | 1 | 0.0000 | | --- | --- | 0.451 | --- |
| Section | | 4.9674 | 0.335 | 0.508 | 0.508 | 0.525 | 0.490 |
| Positive | 2 | 4.9674 | | -0.035 | 0.473 | -0.064 | -0.005 |
| Section | | 1.4743 | 0.340 | 0.153 | 0.625 | 0.154 | 0.151 |
| Non-Reflective | 3 | 6.4418 | | 0.042 | 0.667 | 0.089 | -0.005 |
| Section | | 2.4963 | 0.332 | 0.253 | 0.920 | 0.255 | 0.251 |
| Non-Reflective | 4 | 8.9381 | | 0.055 | 0.975 | 0.108 | 0.002 |
| Section | | 2.8104 | 0.318 | 0.272 | 1.247 | 0.311 | 0.233 |
| Reflective | 5 | 11.7485 | | --- | 1.247 | --- | -0.002 |

Pass/Fail Thresholds (1310 nm)

| Threshold | Fail | Warning |
|----------------------------|--------|---------|
| Unidir splice loss (dB) | 1.000 | 1.000 |
| Bidir splice loss (dB) | 0.100 | 0.100 |
| Unidir connector loss (dB) | 1.000 | 1.000 |
| Bidir connector loss (dB) | 1.000 | 1.000 |
| Fiber sect. att. (dB/km) | 0.400 | 0.400 |
| Span loss (dB) | 45.000 | 45.000 |
| Span length (kft) | 0.0000 | 0.0000 |

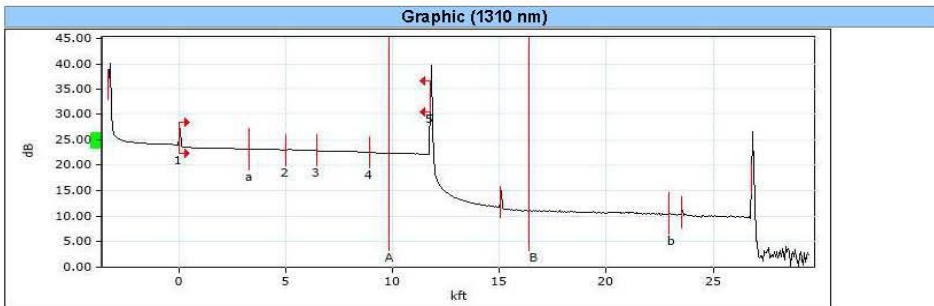
OTDR Bidirectional Report

| Identification Information | | | |
|----------------------------|---------------------------------------|-----------|--------|
| Filename: | TBN_NOC_EAST_PT_110_13101550_20-05-20 | Cable ID: | |
| Test date: | 11/27/2020 | Fiber ID: | PT_110 |
| Test time: | 12:47:02 AM (GMT-05:00) | Customer: | |
| Job ID: | TBN_NOC_EAST;MDBC_Brown_TBN_PNL | Company: | |
| Comments: | ;BB=VIOLET; MDBC=PT_002 | | |

| Location A | Location B |
|------------------------------------|-------------|
| Location: | Location: |
| Operator: DH | Operator: |
| Unit model: FTB-720-12CD-23B-EI-EA | Unit model: |
| Unit s/n: 737962 | Unit s/n: |
| Calibration Date: 1/15/2014 | |

| Test Parameters (1310 nm) | | | |
|---------------------------|---------|---------------|-----|
| Range (kft): | 32.8084 | Pulse (ns): | 100 |
| | | Duration (s): | 30 |

| Results (1310 nm) | | | |
|------------------------|---------|------------------------|--------|
| Span length (kft): | 11.7485 | Span loss (dB): | 1.828 |
| Average loss (dB/kft): | 0.156 | Avg. splice loss (dB): | 0.044 |
| | | Span ORL (dB): | <18.57 |
| | | Max. splice loss (dB): | 0.108 |



| Event Table (1310 nm) | | | | | | |
|-----------------------|-----|-----------------------|-----------|------------------|---------------------|----------------------|
| Type | No. | Location/Length (kft) | Loss (dB) | Reflectance (dB) | Attenuation (dB/km) | Cumulative Loss (dB) |
| Reflective | 1 | 0.0000 | 0.451 | -49.3 | | 0.451 |
| Section | | 4.9674 | 0.525 | | 0.347 | 0.976 |
| Positive | 2 | 4.9674 | -0.064 | --- | | 0.912 |
| Section | | 1.4743 | 0.154 | | 0.343 | 1.066 |
| Non-Reflective | 3 | 6.4418 | 0.089 | --- | | 1.154 |
| Section | | 2.4963 | 0.255 | | 0.335 | 1.409 |
| Non-Reflective | 4 | 8.9381 | 0.108 | --- | | 1.517 |
| Section | | 2.8104 | 0.311 | | 0.363 | 1.828 |
| Reflective | 5 | 11.7485 | --- | -14.3 | | 1.828 |

| Markers Information (1310 nm) | | | Manual Measurements (1310 nm) | |
|-------------------------------|----------------|------------|--------------------------------|--------|
| Marker | Position (kft) | Value (dB) | Measurement | Value |
| a | 3.2586 | 23.176 | 4 points event loss (dB) | 10.600 |
| A | 9.8176 | 22.341 | A-B LSA loss (dB) | 15.393 |
| B | 16.3808 | 11.280 | 2 points section att. (dB/km) | 5.529 |
| b | 22.9441 | 10.537 | A-B LSA attenuation (dB/km) | 7.695 |
| B-A | 6.5632 | 11.061 | 3 points reflectance (dB) | ***** |
| | | | 3 points max. reflectance (dB) | -14.4 |
| | | | A-B ORL (dB) | 15.42 |

| Pass/Fail Thresholds (1310 nm) | | |
|--------------------------------|-------|---------|
| Threshold | Fail | Warning |
| Splice loss (dB) | 1.000 | 1.000 |
| Connector loss (dB) | 1.000 | 1.000 |
| Reflectance (dB) | -10.0 | -10.0 |



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OTDR Bidirectional Report

| | | | |
|--------------------------|--------|--------|--|
| Fiber sect. att. (dB/km) | 0.400 | 0.400 | |
| Span loss (dB) | 45.000 | 45.000 | |
| Span length (kft) | 0.0000 | 0.0000 | |
| Span ORL (dB) | 15.00 | 15.00 | |

OTDR Bidirectional Report

Identification Information

Filename: TBN_NOC_EAST_PT_110_13101550_20-05-20 Cable ID:
 Test date: 11/27/2020 Fiber ID: PT_110
 Test time: 2:23:29 PM (GMT-05:00) Customer:
 Job ID: TBN_NOC_EAST;MDBC_Brown_TBN_PNL Company:
 Comments: ;BB=VIOLET; MDBC=PT_002

Location A Location B

Location: Location:
 Operator: Operator:
 Unit model: FTB-720-12CD-23B-EI-EA
 Unit s/n: 737962
 Calibration Date: 1/15/2014

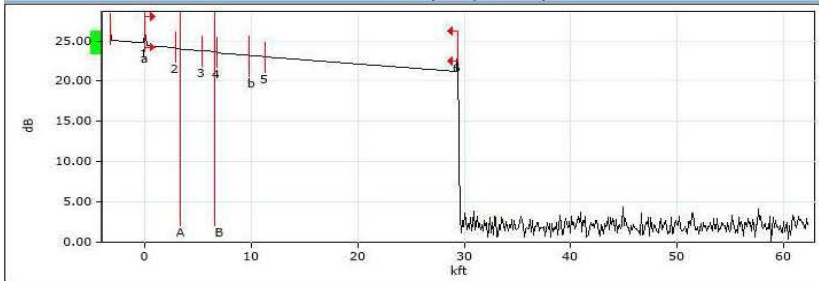
Test Parameters (1310 nm)

Range (kft): 65.6168 Pulse (ns): 100 Duration (s): 30

Results (1310 nm)

Span length (kft): 29.3984 Span loss (dB): 3.669 Span ORL (dB): 33.71
 Average loss (dB/kft): 0.125 Avg. splice loss (dB): 0.107 Max. splice loss (dB): 0.264

Graphic (1310 nm)



Event Table (1310 nm)

| Type | No. | Location/Length (kft) | Loss (dB) | Reflectance (dB) | Attenuation (dB/km) | Cumulative Loss (dB) |
|----------------|-----|-----------------------|-----------|------------------|---------------------|----------------------|
| Reflective | 1 | 0.0000 | 0.298 | -49.8 | | 0.298 |
| Section | | 2.8397 | 0.301 | | 0.348 | 0.600 |
| Non-Reflective | 2 | 2.8397 | 0.264 | --- | | 0.863 |
| Section | | 2.5214 | 0.251 | | 0.327 | 1.115 |
| Positive | 3 | 5.3612 | -0.028 | --- | | 1.087 |
| Section | | 1.3989 | 0.139 | | 0.326 | 1.226 |
| Non-Reflective | 4 | 6.7601 | 0.152 | --- | | 1.378 |
| Section | | 4.5570 | 0.453 | | 0.326 | 1.831 |
| Non-Reflective | 5 | 11.3171 | 0.041 | --- | | 1.873 |
| Section | | 18.0813 | 1.796 | | 0.326 | 3.669 |
| Reflective | 6 | 29.3984 | --- | -45.5 | | 3.669 |

Markers Information (1310 nm) Manual Measurements (1310 nm)

| Marker | Position (kft) | Value (dB) | Measurement | Value |
|--------|----------------|------------|--------------------------------|-------|
| a | -0.0209 | 24.836 | 4 points event loss (dB) | 0.160 |
| A | 3.2586 | 23.930 | A-B LSA loss (dB) | 0.287 |
| B | 6.5381 | 23.633 | 2 points section att. (dB/km) | 0.297 |
| b | 9.8218 | 23.148 | A-B LSA attenuation (dB/km) | 0.287 |
| B-A | 3.2795 | 0.297 | 3 points reflectance (dB) | -61.1 |
| | | | 3 points max. reflectance (dB) | -83.9 |
| | | | A-B ORL (dB) | 39.85 |

Pass/Fail Thresholds (1310 nm)

| Threshold | Fail | Warning |
|------------------|-------|---------|
| Splice loss (dB) | 1.000 | 1.000 |

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OTDR Bidirectional Report

| | | |
|--------------------------|--------|--------|
| Connector loss (dB) | 1.000 | 1.000 |
| Reflectance (dB) | -10.0 | -10.0 |
| Fiber sect. att. (dB/km) | 0.400 | 0.400 |
| Span loss (dB) | 45.000 | 45.000 |
| Span length (kft) | 0.0000 | 0.0000 |
| Span ORL (dB) | 15.00 | 15.00 |

2. OTDR Bidirectional Report (1550 nm)

OTDR Bidirectional Report

Identification Information

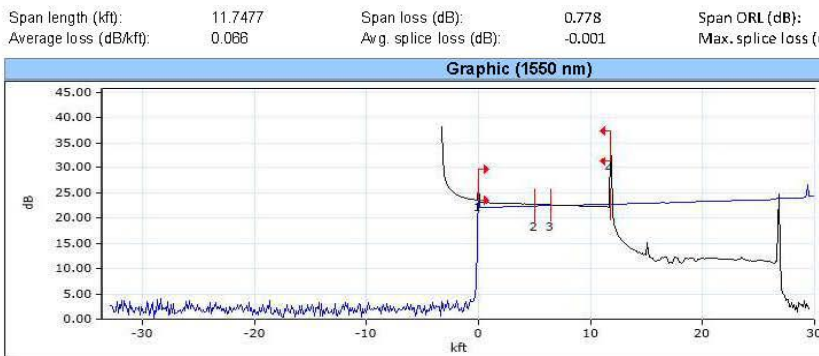
| | |
|---|------------------|
| Filename: TBN_NOC_EAST_PT_110_13101550_20-05-20_1 | Cable ID: |
| Test date: 11/27/2020 | Fiber ID: PT_110 |
| Test time: 2:14:14 AM (GMT-05:00) | Customer: |
| Job ID: TBN_NOC_EAST;MDBC_Brown_TBN_PNL | Company: |
| Comments: ;BB=VIOLET; MDBC=PT_002 | |

| Location A | Location B |
|--|---|
| Location: Operator: DH Unit model: FTB-720-12CD-23B-EI-EA Unit s/n: 737962 Calibration Date: 1/15/2014 | Location: Operator: Unit model: FTB-720-12CD-23B-EI-EA Unit s/n: 737962 Calibration Date: 1/15/2014 |

| Test Parameters | A->B | B->A | Test Settings | A->B | B->A |
|------------------------|---------|---------|--|----------|----------|
| Wavelength (nm): | 1550 | 1550 | IOR: | 1.468325 | 1.468325 |
| Fiber Core Size (μm): | 9 | 9 | Backscatter (dB): | -81.87 | -81.87 |
| Range (kft): | 32.8084 | 65.6168 | Helix Factor (%): | 0.00 | 0.00 |
| Pulse (ns): | 100 | 100 | Splice loss detection threshold (dB): | 0.020 | 0.020 |
| Duration (s): | 30 | 30 | Reflectance detection threshold (dB): | -72.0 | -72.0 |
| | | | End-of-fiber detection threshold (dB): | 5.000 | 5.000 |

| Results (1550 nm) | | | | | |
|------------------------|---------|------------------------|--------|------------------------|-------|
| Span length (kft): | 11.7477 | Span loss (dB): | 0.778 | Span ORL (dB): | --- |
| Average loss (dB/kft): | 0.066 | Avg. splice loss (dB): | -0.001 | Max. splice loss (dB): | 0.043 |

Graphic (1550 nm)



Event Table (1550 nm)

| Type | No. | Location/Length (kft) | Average Attenuation (dB) | Average Loss (dB) | Cumulative Loss (dB) | Loss A->B (dB) | Loss B->A (dB) |
|----------------|-----|-----------------------|--------------------------|-------------------|----------------------|----------------|----------------|
| Reflective | 1 | 0.0000 | | --- | --- | 0.998 | --- |
| Section | | 5.0407 | 0.217 | 0.334 | 0.334 | 0.366 | 0.302 |
| Positive | 2 | 5.0407 | | -0.045 | 0.289 | -0.082 | -0.009 |
| Section | | 1.3774 | 0.157 | 0.066 | 0.355 | 0.075 | -0.057 |
| Non-Reflective | 3 | 6.4181 | | 0.043 | 0.398 | 0.099 | -0.013 |
| Section | | 5.3296 | 0.234 | 0.380 | 0.778 | 0.450 | 0.310 |
| Reflective | 4 | 11.7477 | | --- | 0.778 | --- | -0.010 |

Pass/Fail Thresholds (1550 nm)

| Threshold | Fail | Warning |
|----------------------------|--------|---------|
| Unidir splice loss (dB) | 1.000 | 1.000 |
| Bidir splice loss (dB) | 0.100 | 0.100 |
| Unidir connector loss (dB) | 1.000 | 1.000 |
| Bidir connector loss (dB) | 1.000 | 1.000 |
| Fiber sect. att. (dB/km) | 0.400 | 0.400 |
| Span loss (dB) | 45.000 | 45.000 |
| Span length (kft) | 0.0000 | 0.0000 |



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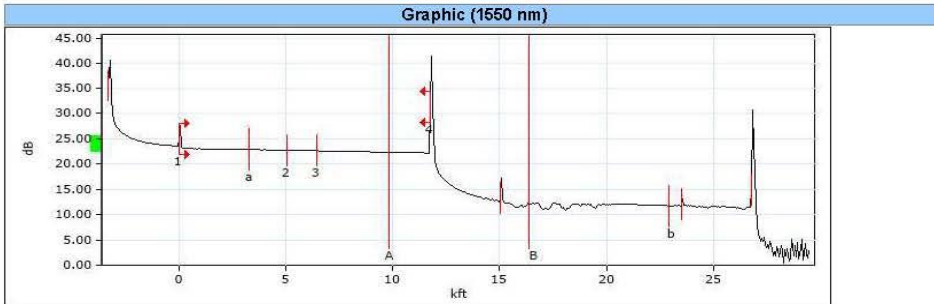
OTDR Bidirectional Report

| Identification Information | | | |
|----------------------------|---------------------------------------|-----------|--------|
| Filename: | TBN_NOC_EAST_PT_110_13101550_20-05-20 | Cable ID: | |
| Test date: | 11/27/2020 | Fiber ID: | PT_110 |
| Test time: | 12:47:34 AM (GMT-05:00) | Customer: | |
| Job ID: | TBN_NOC_EAST;MDBC_Brown_TBN_PNL | Company: | |
| Comments: | ;BB=VIOLET; MDBC=PT_002 | | |

| Location A | Location B |
|------------------------------------|-------------|
| Location: | Location: |
| Operator: DH | Operator: |
| Unit model: FTB-720-12CD-23B-EI-EA | Unit model: |
| Unit s/n: 737962 | Unit s/n: |
| Calibration Date: 1/15/2014 | |

| Test Parameters (1550 nm) | | | |
|---------------------------|---------|---------------|-----|
| Range (kft): | 32.8084 | Pulse (ns): | 100 |
| | | Duration (s): | 30 |

| Results (1550 nm) | | | |
|------------------------|---------|------------------------|--------|
| Span length (kft): | 11.7477 | Span loss (dB): | 1.906 |
| Average loss (dB/kft): | 0.162 | Avg. splice loss (dB): | 0.009 |
| | | Span ORL (dB): | <19.22 |
| | | Max. splice loss (dB): | 0.099 |



| Event Table (1550 nm) | | | | | | |
|-----------------------|-----|-----------------------|-----------|------------------|---------------------|----------------------|
| Type | No. | Location/Length (kft) | Loss (dB) | Reflectance (dB) | Attenuation (dB/km) | Cumulative Loss (dB) |
| Reflective | 1 | 0.0000 | 0.998 | -50.0 | | 0.998 |
| Section | | 5.0407 | 0.366 | | 0.238 | 1.364 |
| Positive | 2 | 5.0407 | -0.082 | --- | | 1.282 |
| Section | | 1.3774 | 0.075 | | 0.178 | 1.357 |
| Non-Reflective | 3 | 6.4181 | 0.099 | --- | | 1.456 |
| Section | | 5.3296 | 0.450 | | 0.277 | 1.906 |
| Reflective | 4 | 11.7477 | --- | -16.6 | | 1.906 |

| Markers Information (1550 nm) | | | Manual Measurements (1550 nm) | | |
|-------------------------------|----------------|------------|--------------------------------|--------|--|
| Marker | Position (kft) | Value (dB) | Measurement | Value | |
| a | 3.2572 | 22.818 | 4 points event loss (dB) | 10.157 | |
| A | 9.8176 | 22.253 | A-B LSA loss (dB) | 14.584 | |
| B | 16.3822 | 12.159 | 2 points section att. (dB/km) | 5.045 | |
| b | 22.9427 | 11.538 | A-B LSA attenuation (dB/km) | 7.289 | |
| B-A | 6.5646 | 10.094 | 3 points reflectance (dB) | ***** | |
| | | | 3 points max. reflectance (dB) | -16.6 | |
| | | | A-B ORL (dB) | 17.03 | |

| Pass/Fail Thresholds (1550 nm) | | |
|--------------------------------|--------|---------|
| Threshold | Fail | Warning |
| Splice loss (dB) | 1.000 | 1.000 |
| Connector loss (dB) | 1.000 | 1.000 |
| Reflectance (dB) | -10.0 | -10.0 |
| Fiber sect. att. (dB/km) | 0.400 | 0.400 |
| Span loss (dB) | 45.000 | 45.000 |

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| | | | |
|-------------------|--------|--------|--|
| Span length (kft) | 0.0000 | 0.0000 | |
| Span ORL (dB) | 15.00 | 15.00 | |

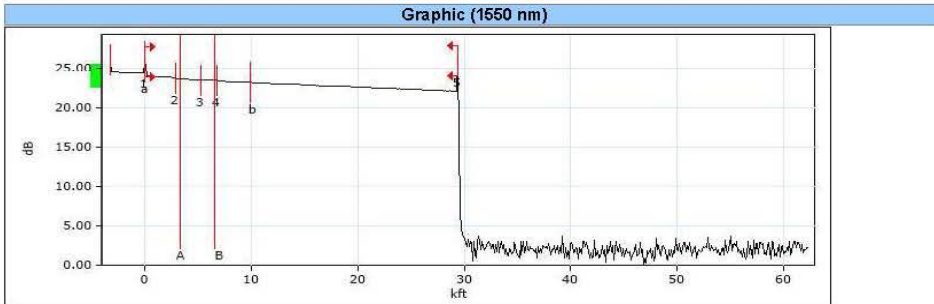
OTDR Bidirectional Report

| Identification Information | | | |
|----------------------------|---------------------------------------|-----------|--------|
| Filename: | TBN_NOC_EAST_PT_110_13101550_20-05-20 | Cable ID: | |
| Test date: | 11/27/2020 | Fiber ID: | PT_110 |
| Test time: | 2:24:00 PM (GMT-05:00) | Customer: | |
| Job ID: | TBN_NOC_EAST;MDBC_Brown_TBN_PNL | Company: | |
| Comments: | ;BB=VIOLET; MDBC=PT_002 | | |

| Location A | Location B |
|-------------|------------------------------------|
| Location: | Location: |
| Operator: | Operator: |
| Unit model: | Unit model: FTB-720-12CD-23B-EI-EA |
| Unit s/n: | Unit s/n: 737962 |
| | Calibration Date: 1/15/2014 |

| Test Parameters (1550 nm) | | | |
|---------------------------|---------|---------------|-----|
| Range (kft): | 65.6168 | Pulse (ns): | 100 |
| | | Duration (s): | 30 |

| Results (1550 nm) | | | |
|------------------------|---------|------------------------|-------|
| Span length (kft): | 29.4026 | Span loss (dB): | 2.289 |
| Average loss (dB/kft): | 0.078 | Avg. splice loss (dB): | 0.083 |
| | | Span ORL (dB): | 34.86 |
| | | Max. splice loss (dB): | 0.168 |



| Event Table (1550 nm) | | | | | | |
|-----------------------|-----|-----------------------|-----------|------------------|---------------------|----------------------|
| Type | No. | Location/Length (kft) | Loss (dB) | Reflectance (dB) | Attenuation (dB/km) | Cumulative Loss (dB) |
| Reflective | 1 | 0.0000 | 0.321 | -50.8 | | 0.321 |
| Section | | 2.8511 | 0.241 | | 0.277 | 0.561 |
| Non-Reflective | 2 | 2.8511 | 0.168 | --- | | 0.730 |
| Section | | 2.4199 | 0.118 | | 0.161 | 0.848 |
| Positive | 3 | 5.2710 | -0.047 | --- | | 0.801 |
| Section | | 1.4863 | 0.079 | | 0.174 | 0.880 |
| Non-Reflective | 4 | 6.7572 | 0.127 | --- | | 1.007 |
| Section | | 22.6454 | 1.282 | | 0.186 | 2.289 |
| Reflective | 5 | 29.4026 | --- | -45.1 | | 2.289 |

| Markers Information (1550 nm) | | | Manual Measurements (1550 nm) | | |
|-------------------------------|----------------|------------|--------------------------------|-------|--|
| Marker | Position (kft) | Value (dB) | Measurement | Value | |
| a | -0.0209 | 24.344 | 4 points event loss (dB) | 0.234 | |
| A | 3.2572 | 23.588 | A-B LSA loss (dB) | 0.101 | |
| B | 6.5395 | 23.462 | 2 points section att. (dB/km) | 0.126 | |
| b | 9.8218 | 23.186 | A-B LSA attenuation (dB/km) | 0.101 | |
| B-A | 3.2823 | 0.126 | 3 points reflectance (dB) | -63.1 | |
| | | | 3 points max. reflectance (dB) | -73.2 | |
| | | | A-B ORL (dB) | 42.08 | |

| Pass/Fail Thresholds (1550 nm) | | |
|--------------------------------|-------|---------|
| Threshold | Fail | Warning |
| Splice loss (dB) | 1.000 | 1.000 |
| Connector loss (dB) | 1.000 | 1.000 |
| Reflectance (dB) | -10.0 | -10.0 |

EXFO Signature: _____ 27-11-2020