Purchasing Services Office
801 Leroy Place
Socorro, NM 87801
(575) 835-5881

Letter of Addendum

TO: All Offerors

FROM: Kimela Miller

DATE: June 29, 2021

RE: RFP Number: 2105016P - Amendment #1 Commodity: Fiber and

Please check the NM Tech website often for updates on this RFP.

Q1) What is the Voltage of the substation?
A1) There is not a substation at PRTC. Power is provided to PRTC by Columbus Electric Cooperative through a three-phase overhead line that transitions to underground at PRTC. The voltage of the line is thought to be 25 kV, but this will need to be verified with Columbus Electric Cooperative.

Q2) What is the size of the substation and current line?
A2) There is not a substation.

Q3) Who owns this station?
A3) There is not a substation.

Q4) What kind of Relays are they running?
A4) There is not a substation, so there are no relays.

Q5) What kind of communications protocol are they running?
A5) There is not a substation, so there are no associated communications.

Q6) How many homes will be feed on this new Grid?
A6) There are 251 homes. Phases 1, 2, 3 and 4 have 76, 84, 43 and 48 homes, respectively.

Q7) How many and what are the Service size for buildings other than homes?
A7) There are a total of 19 buildings, complexes and sites that are not homes. 18 of the buildings, complexes and sites are part of phase 1 and are listed below.

- Four buildings are served by three-phase power, one of which is estimated to require 400 kVA service and the other three have an estimated 300 kVA service each.
- An apartment complex is served by single-phase power with an estimated 300 kVA service.

- Four buildings are served by single-phase power with an estimated service of 75 kVA each.
- Nine smaller buildings and sites are each to be served by single-phase, 200 A residential-type service.

There is one site in phase 3 that is not a home. It is to be served by single-phase, 200 A residential-type service.

Q8) We would like the Drawings on this station.
A8) There is not a substation, so there are no drawings.

Q9) Where would the main SCADA Operator interface be placed for the new grid?
A9) There will be a centralized location for computer servers and networking in an existing building. The operator interface will be in this location for on-site access, but remote access is expected as well.

Q10) What are the requirements for the Uninterrupted Power supply or equivalent?
A10) On page 16 of RFP, item 21 notes "All locations in the field lab where the fiber network terminates need to be supplied with redundant uninterrupted power to 30 amps of 110 volt service." In addition, the approach to providing uninterrupted power should be easy to maintain in terms of both duration of time between regular maintenance and number of locations at which regular maintenance needs to be performed.

Q11) Is there a Capacitor bank on the current system if so what size?
A11) There is not a capacitor bank.

Q12) What are the requirements or intent of experiment power sources?
A12) The experimental power sources themselves are not part of this RFP, but the experimental power grid will facilitate connection of experimental power sources in the future.

Q13) Please provide design standards from Utility and any for the installation.
A13) The power grid will interface to the three-phase feeder line from Columbus Electric Cooperative. The interface will need to be coordinated with Columbus Electric Cooperative and the power grid will need to adhere to all applicable codes.

Q14) In text underground installation is given the slides show pole type transformers please clarify.
A14) The installation of the lines will be underground and pad-mounted transformers are expected. The pole-type transformers in the slides were for ease of presentation only.

Q15) Is standard Headroom for future needs a 100% expansion?
A15) 100% is more than needed. 50% headroom will be sufficient.

Q16) Where would the new substation if need be located?
A16) If needed, there is space available for a substation at the point of interconnect with Columbus Electric Cooperative as well as throughout the PRTC.

Q17) Who would be the governing authority for this build?
A17) New Mexico Tech will inspect and approve the installation.

Q18) Can this be broken out into 3 RFP one for Research and development one for engineering and one for construction?
A18) No.

Q19) What level of Isolation and switching is desired?
A19) For the power grid supplied by the utility ("grid one"), standard engineering practice is expected. For the experimental power grid ("grid two"), the second bullet on page 13 of the RFP notes ""Grid two" will have single-phase radial branches that can be isolated via switches located at convenient points of interconnect with the upstream feeders as well as intermediate locations." The ability to isolate each branch of the experimental power grid at a convenient midpoint as well as the points of interconnect will be sufficient.

Q20) We would like a meeting with the people who are involved in this design for the power.
A20) At this time, no interaction with the department is allowed. The site visit held on June 10 was the only opportunity to meet the team. Once an award is made, then interaction is permitted.

Q21) The documents show solar at each house. Can you clarify how many kWh you want each house to receive?
A21) Solar is not part of this RFP, but the experimental power grid will facilitate solar generation, as well as other experimental generation, at the house(s) in the future.

Q22) What size of service do you want for the homes?
A22) 200 A.

Q23) Can you please verify that this project will be permitted? Will the permitting agency be the State of New Mexico?
A23) The project will be permitted by the State of New Mexico's Construction Industries Division.

Q24) Will water be available for boring and trenching activities?
A24) Yes, water will be available at those locations with active service.

Q25) Can you please verify that we are only pricing phase one and not all four phases?
A25) Pricing is for all four phases with the cost of each phase specifically noted.

Q26) Will there be a pricing form from you all or shall we use our own?
A26) We will provide a pricing form via addendum.

Q27) The RFP talks about having the capability to use the fiber optic infrastructure in a passive and active way. Is it the intention to have the capability at all the homes to use the fiber actively or just the buildings and ancillary facilities?
A27) The intention is that we can have a field technician choose which fibers in the bundle to any endpoint are part of the PON and which are part of an active system. It may be that some items in a building get their service via that PON and some via active. Any place where we have fiber termination should allow for the choosing of which strands serve which purpose at that endpoint.

Q28) Is redundancy and redundant routes needed to residence and "other structures" as well?
A28) Redundancy in physical pathing is only required between the "zone cabinets". We do not require redundancy to each physical termination point.

Q29) If redundant networks, can one be PON and one standard ethernet?
A29) We are placing a mix of PON and active so we have both technologies available for future experiment needs. The objective is not to use one as a cold backup for the other. We want to be able to "light up" a strand to an endpoint as passive and a pair to the same endpoint as active. See Q28 for where we do want physical path redundancy.

Q30) How many end structures will be fed from fiber distribution backbones via vault splice?
A30) There are at least 283 structures that will need fiber service. How to use vaults or intermediate cabinets is part of your design.

Q31) Will each structure and home receive 48 OS2 strands from redundant paths or 2 x 48 strands per structure?
A31) We would like 24 pair/48 strands (12 pair is the minimum) per fiber endpoint from a single path between a "zone cabinet" and the endpoint (no redundancy at that level). Between "zone cabinets" we do want redundancy. Your design should specify how best to implement such redundancy.

Q32) What planned transceiver standards are planned for each application “day one” and will all Structures be capable of 400G in the future.
A32) For the active fiber we plan 10G SFP+ transceivers “day one”, with 40G QSFP expected to “just work” in the near future. As the costs of transceivers lowers, we expect to be able to bring online 400G simply by changing out transceivers. We understand that some transceivers may require more than a single pair of fiber to get their full bandwidth.

Q33) Is the response for all 3 phases of the project?
A33) Pricing is for all four phases with the cost of each phase specifically noted.

Q34) How many copper ports are required per each residence?
A34) We expect an LC fiber patch for the termination bulkhead at each location. Then we will patch into an ONT for the passive network. It would be nice if the ONT supplied an SFP+ port, but a 10G RJ45 copper port will suffice. We expect to do all the active connections via fiber patch to SFP+/QSFP+ transceivers.

Q35) Do copper ports need POE?
A35) No.

Q36) Do we need firewall or internet edge security at any point in the network?
A36) No, we will be providing all corporate network and network security services and as such is outside the scope of this RFP.

Q37) Do you want a wireless device connected to each edge device in each residence?
A37) No, such functionality is not in the scope of this RFP.

Q38) Are there any aesthetic requirements at the pedestal?
A38) No.

Q39) Will maintenance and support be required after the implementation?
A39) Maintenance and support are not part of this RFP.

Q40) How much back-up time do you need at all hubs?
A40) We need to be able to keep 120V @ 5AMPS up for an hour. System should be designed that if we have 10amps we get ½ hour (roughly).

Q41) Will redundancy be required for all hubs as part of phase I?
A41) Power backup at the endpoints should be part of phase 1. Redundant fiber lines to “intermediate cabinets” should be part of phase 1. From a fiber perspective, your design may be flexible in which endpoints and which “intermediate cabinets” are part of phase 1.

Q42) What is the timeline for each phase?
A42) Phase 1 will start upon contract execution and is time sensitive. Future phases will be contingent upon federal funding.

Q43) Is there spare equipment requirement for GPON?
A43) The GPON will service at least 283 endpoints, we expect to have industry standard amounts of “cold” spare equipment (for example ONT) to service that many endpoints. On the OLT side, please provide pricing for the costs of the components used in the OLT so we can determine the cost/benefit for which components should have spares.

Q44) How many racks will be installed at the headend?

A44) If we draw a parallel between “headend” and “intermediate zone cabinet” then we expect to have 24U of usable rack space for switching equipment (no heavy heat generating servers). Your design should also supply appropriate space for power and cooling beyond the 24U we will be using for equipment.

Q45) Where is the demark located?
A45) Your design should provide a logical location for the demark that feeds everything in the “field lab”. Initially the demark will be served from the data center in the “classroom complex” off of Market St. We plan to move the data center in the future. Your plans/design should not prevent us from easily moving the data center that serves the demark.

Q46) Where are the closest trailer hooks up located?
A46) They were removed when the site closed in 2012.

Q47) Do you have Geo Reports of Ground conditions in the area?
A47) A Geotechnical Engineering Report has been performed at one site within PRTC. The relevant section of that report will be posted.

Q48) Do we price all excavation as dirt conditions and just put a price per foot adder for rock and anytime we encounter rock just add the additional cost?
A48) Review the Geotechnical Engineering Report that is available for the one site and price accordingly with an adder as suggested for more rocky conditions. Difficult conditions for digging/trenching are not expected.

Q49) The project seems to be a design build type of project, how do we present our proposals to give a comparison so the customer know what we are offering and knows that if our price is higher than someone else, we may be offering more of what is being offered and our competition may not be fulfilling all the needs that are desired for this project?
A49) Present the proposal with information related to the project along with the experience you have with these types of projects and why you, and your design, are the best choice.

Q50) Do you have any specs on what you would like to use for optical network terminals to change from fiber to ethernet at all remote locations?
A50) For the passive network, on the ONU/ONT we would like an SFP+ port. This allows us to switch to an active fiber connection on the network at the remote location (or 10G RJ45 copper if we desire). If an SFP+ on the passive ONU/ONT is not possible, then we would like a 10G RJ45 copper connection. For the active networks we expect to be able to use SFP+/QSFP+ transceivers in our equipment with LC connectors.

Q51) Do we include switches for all the fiber coming into the main data closet? If so do you have specs on what you would like us to follow for the switches?
A51) For the active fiber network, do not include the switches, we will supply that equipment via a different means. We do expect to have an LC connection that we can use to patch from the termination point into a switch.

Q52) How much work will we need to expect to do to, to connect to the experimental power grid? Where will we be connecting to this experimental power grid?
A52) The experimental power grid (“grid two”) will be placed alongside the power grid (“grid one”) supplied by Columbus Electric Cooperative such that houses/buildings can be connected to either. The experimental power grid will not be energized as part of this project since experimental power sources are not part of this project.

Q53) Will NMIT provide places for our construction crews to stay in Playas or do we need to plan on traveling everyday from the closest town? Houses, RV Hook Ups, etc.
A53) This is yet to be determined based upon the size of the construction crew, duration of the project and activities scheduled in PRTC. For the purpose of pricing, construction crews should plan to stay in the nearest town.

Q54) Will you require 48 Strand Fiber Optic Cable to each house per Specs (this seems overkill)? We recommend 6 Strands based on requirements.
A54) 3 pairs is insufficient. This network is not a standard telecom project. 12 pair minimum, 24 pair preferred. We understand 24 pair may be awkward as many exterior terminating cabinets that hold the ONT equipment don't support that number.

Q55) Do we demo the existing power infrastructure or just leave abandoned in place?
A55) Infrastructure owned by Columbus Electric Cooperative will be left in place. Infrastructure owned by New Mexico Tech can be left in place unless it interferes with installation.

Q56) Who will be in charge of locating existing utilities?
A56) New Mexico Tech will oversee locating existing utilities.

Q57) It is our understanding that you want both a passive and active optical network throughout the entire project correct? If this is the case do you want both passive and active networks to have optical network terminals at all locations?
A57) We want to be able to have a technician choose which fibers in a bundle carry passive vs active signals. As such, provide patching capabilities at the fiber termination point. It is expected to have passive ONU/ONT equipment at all fiber endpoint locations and these should be included in the costs. It is also expected to have passive OLT at a central data center location and its cost should be included. Active switching equipment is not part of this project. For the active network we expect to have LC fiber terminals that we can plug into.

Q58) Is bonding required? If yes can you, please outline type(s) and limits?
A58) See attached updated General Terms and Conditions.

Q59) Will permits need to be pulled?
A59) Yes. Contractor will be responsible for pulling permits. The project will be permitted by the State of New Mexico's Construction Industries Division.

Q60) Are you requiring any special certifications for these installs?
A60) No.

Q61) Does NM Tech require any special registration or specific documents outside of the bid package such as conflict of interest forms, etc.
A61) The forms to be completed will be in the RFP and, if needed, added via addenda.

Added to the proposal are the following General Terms and Conditions. A separate document will be added to the website showing the Geotechnical Survey.

GENERAL TERMS AND CONDITIONS

BID DOCUMENTS: Each bidder is responsible for reading and being thoroughly familiar with the bid documents. The failure or omission of any bidder to do the foregoing shall not relieve any bidder from any obligation in respect to their bid. Any information obtained from an officer, agent or employee of the Institute or any other person shall not affect the risks or obligations assumed by the bidder or relieve the bidder from fulfilling any of the conditions of their bid, or any resulting contract. Any changes, additions or deletions will be made by written addendum issued by the Institute's Purchasing Office.

BID BOND: A bid bond not less than five percent (5%) of the maximum bid, payable to the Owner, with the understanding that if the Bid is accepted the Bidder will within ten (10) days thereafter, enter into a contract and give acceptable Surety Company Performance Bond and Labor and Material Payment Bond, in the full amount of the contract for such work.

PERFORMANCE & PAYMENT BONDS: Performance and Payment Bonds in the amount of one hundred percent (100%) of the contract price, with a corporate surety approved by the Institute, will be required for the faithful performance of the contract. Attorneys-in-fact who sign Bid Bonds, Performance Bonds and Payment Bonds must file with each bond, a certified and effective dated copy of their power of attorney.

NOTICE OF AWARD: The Institute will issue a "Notice of Award" to the successful bidder. The party to whom the contract is awarded will be required to execute the Agreement and obtain the required Payment and Performance Bonds within 10 calendar days from the date when the Notice of Award is delivered to the bidder. In case of failure of the awarded Bidder to execute the Agreement, the owner may consider the Bidder in default and the "notice of award rescinded. The Institute will consider making subsequent award to the remaining bidders, or terminate this bid and solicit new proposals, whatever is in the best interests of the Institute,

NOTICE TO PROCEED: The Institute shall issue the Notice to Proceed, with a copy of the executed Agreement signed by the Bidder and the Institute, within ten (10) calendar days of receipt of the signed agreement from the Bidder. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the Bidder and the Institute.

BIDDER QUALIFICATIONS: Before the Notice of Award is issued, the Institute shall be satisfied that the Bidder being considered for award, (l) has appropriate technical experience, (2) has a financial status to meet obligations incident to the work, (3) has adequate equipment to do the work properly and expeditiously, and (4) has satisfactorily completed other projects of this nature. It is the responsibility of the bidder to acquaint the Institute with these qualifications as required. The Institute may make such investigations as deemed necessary to determine the qualifications of the Bidder and the Bidder shall furnish to the Institute all such information and data as requested for this purpose.

REJECTION: The Institute reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Institute that such BIDDER is properly qualified to carry out the obligations of the Agreement, and to complete the work contemplated therein.

COMMENCEMENT DATE: Services to be purchased under this bid are to begin at the earliest date possible. The successful Bidder and the Institute shall mutually agree to the commencement date prior to the issuance of the Notice of Award.

LICENSES, CERTIFICATES, PERMITS: Bidders must be able to furnish evidence of any licenses, certificates or building permits, as required in this bid, in performance of the contract as required by state, federal or local law. Failure to furnish such evidence will be cause for rejection of their bid or cancellation of the resulting contract.

WARRANTY OF WORKMANSHIP: Contractors workmanship shall be warranted for twelve (12) months from date of acceptance by the Institute. Defects in workmanship shall be corrected by the Contractor at no additional cost to the Institute. The Manufacturer's standard warranty shall be honored and administered by the Contractor.

F.O.B. JOB SITE: Performance shall be performed at New Mexico Institute of Mining and Technology, Socorro, NM., at the site called for, and in accordance with the executed Agreement. The awarded Contractor is to remove all debris and return all property of the Institute to usable condition, needing only usual and customary custodial cleaning by the Institute. Bid prices are to include all packing, handling, transportation, excavation and construction services.

METHOD OF BID: Bidders shall submit a total net bid for the project and any alternate items as called for on the Bid Proposal and Schedule form(s). Bidders are to complete the enclosed bid form(s). They may then reference any attachments giving further price breakdowns if necessary

EVALUATION OF BIDS: Bids will first be evaluated for proper signature(s) resident contractor certificate number and completeness of submittals requested in the Bid Proposal and Schedule. Incomplete bids will be rejected and

not evaluated further. The remaining will then be evaluated for best meeting the specifications, terms and conditions of this Request for Bids.

METHOD OF AWARD: Award shall be made to the lowest responsible Bidder for the project listed which is judged to be in the best interest of the Institute.

SITE PREPARATION: Site preparation (i.e. clearing, occupant notification) will be made by the Institute prior to work commencement by the Contractor. Temporary electric power, if required and access to public restroom facilities to be furnished by the Institute. An area for material storage will be provided by the institute for the contractor. The Contractor is responsible for safety boundary during construction, materials clearing and area cleanup daily. Repair and or replacement of damaged existing building structure resulting from new construction.

SPECIFICATIONS: Enclosed you will find a copy of the New Mexico Tech's specifications and floor plans or for the project. The specifications include applicable sketches, drawings and product information regarding the material requirements for this construction project. The specifications are furnished for the purpose of describing the standard of quality, performance and characteristics desired and not intended to limit or restrict competition.

All Offerors are required to confirm the receipt of this amendment in their response. All other terms and conditions of the RFP remain unchanged.

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