



Rio Blanco County's

Request for Proposals for:

RIO BLANCO
BROADBAND
FTTx Electronics

RFP Announced: October 14, 2015

Proposal Deadline: November 9, 2015

Vision Statement

Rio Blanco County (County) and its partners will implement and maintain IT infrastructure and services resulting in Rio Blanco County positioning itself as a modern, world class destination for tourism; business growth; safe, healthy, happy living; and as an ideal place to raise, educate, and retain your family. County will accomplish this by implementing a Fiber to the home (FTTH) solution in Meeker and Rangely and a licensed high bandwidth fixed wireless backhaul system across a countywide tower network for the delivery of modern high speed broadband, cellular, and emergency services (ES) within the next 3 years.



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Introduction

Rio Blanco County is seeking Proposals for the design, implementation, testing, training, and support for the electronics involved in Lighting County's FTTx project in Rio Blanco County. Although the RFP examines both GPON and traditional connections, Vendors are encouraged to respond even if they only provide traditional solutions.

Before beginning any Response work to this RFP, please read the entire RFP. There are some detailed instructions and specific format requirements for responses.

Websites

- This RFP including "Post RFP Release - Additional Information" can be found at https://docs.google.com/document/d/1W2GOtm0R7Y6Rcbt6RY-Ni_ev1NAvMKl6mWL3s_5SRU
- More information can be found at County's Rio Blanco Broadband website: <http://www.rbc.us/wcitic>
- Many hyperlinks and critical forms within this RFP work best and may require Vendor to use a GMail or Google Apps account. If Vendor chooses, a non-Google email, it can be Google authenticated at <https://accounts.google.com/signupwithoutgmail>.

Definition of Terms

This section provides a list of definition of terms found throughout the RFP.

- **Administrator** - County's IT Director and The Project's project manager, Blake Mobley
- **AE** - Active Ethernet
- **CAI** - Publicly owned, Community Anchor Institution such as schools, town governments, libraries, etc.
- **CLI** - Command Line Interface
- **Co-Lo** - Colocation Data Centers for The Project, one in Meeker and one in Rangely
 - **mCo-Lo** - Meeker's Colocation Data Center
 - **rCo-Lo** - Rangely's Colocation Data Center
- **County** - Board of County Commissioners of Rio Blanco County, Colorado
- **CPE** - Customer Premises Equipment. The electronic device at the customer's home, business, or CAI that interfaces between The Project's Fiber Optics and the customer.
- **CPR** - Continuing Property Record
- **Drop** or **Drop Run** - Fiber Cable from a handhole to, but not including, the CPE
- **EMS** - Element Management System
- **Engineer** - County's engineering partner, Mid-State Consultants, Inc
- **EOL** - End of Life, a date when equipment is not longer to be supported by warranty or support
- **Fiber** or **Fiber Cable** or **Fiber Optic Cable** - Single Mode, Fiber Optic cable
- **FTTT** - Fiber to the Tower. two strands of Fiber from the nearest Co-Lo to that communities nearest tower. There is only 1 FTTT near Meeker (**mFTTT**) and 1 FTTT in Rangely (**rFTTT**)



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- **FTTx** - Fiber to the Block (**FTTB**), Fiber to the Premises (**FTTP**), Fiber to the Home (**FTTH**), Fiber link between mCo-Lo and rCo-Lo (**mrLink**), and Fiber to the Tower (**FTTT**) network
- **GPON** - Gigabit Passive Optical Network
- **GUI** - Graphic User Interface
- **Home Run** or **Home Ran** - The Fiber Cable from the handhole to the first termination of said Fiber at the Co-Lo. In other words, the lateral Fiber runs including one, and only one, termination per end.
- **IP** - Internet Protocol
- **IPTV** - Television service over IP
- **Lit** or **Lighting** or **Light** - Electronics are implemented, tested, and operating to successfully deliver services across the FTTx
- **MAN** - Metropolitan Area Network - more specifically a private network interconnecting a specific CAI's assets across The Project
- **MDU** - Multi Dwelling Unit. Examples: duplex, quadplex, mother-in-law suite, apartment building, dorms
- **Network Operator** - County's network manager, Colorado.Fiber.Community, LLC. The company contracted by County to manage and operate The Project.
- **NG-PON2** - Next-Generation Passive Optical Network 2. The standard was developed by [ITU](#) and details an architecture capable of total network throughput of 40 Gbps, corresponding to up to 10 Gbps symmetric upstream/downstream speeds available at each subscriber.
- **OLT** - Optical LAN Terminal, more specifically the Co-Lo electronics to supply AE and GPON services across the FTTx
- **OAM&P** - Operation, Administration, Maintenance, and Provisioning software
- **ONT** - Optical Network Terminal. The CPE device used to connect to a GPON, NG-PON2, or AE network.
- **OSI** - Open Systems Interconnect - an industry standard network model with seven layers ranging from Physical (layer 1) to Application (layer 7).
- **PON** - Passive Optical Network. This term can be used to refer to one segment of a GPON or NG-PON2 deployment.
- **POTS** - Plain Old Telephone Service - RJ11 copper port capable of providing traditional phone service
- **The Project** - The countywide, Rio Blanco Broadband - FTTx Project
- **Proposal** or **Response** - The "RFP Proposal Form" document and related documents in responding to the RFP
- **RFP** - Request for Proposal, specifically the "Rio Blanco Broadband - FTTx Electronics"
- **Vendor** - Any respondent to The Project's RFP process
- **VLAN** - Virtual Local Area Network - a virtual network for traffic separation created within a physical network
- **VOIP** - Voice over IP

Response Instructions

General Instructions



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This is a competitive bid. Vendor does not need to provide contract documents with the Proposal submittal. Once a Vendor has been selected, signed contracts with original signatures shall be assembled. This RFP and the selected Vendor's Proposal shall be attached to the contract.

County, WCITC Group, and/or Network Operator shall make every effort to review Vendor's Proposal for completeness, but the final responsibility for a complete submittal shall be solely upon Vendor. If it is not clear whether County or Vendor will provide a necessary task or element to The Project, or if any task or element is not covered, it will be up to Vendor to fulfill the task or element. Vendors are strongly encouraged to ask County for any necessary clarifications during the RFP process.

The information provided will be used to evaluate the qualifications of Vendors. This information is not intended to restrict competition. The intent is to protect County's interests by ensuring Vendor is competent, capable of quality work, and financially able to complete The Project on time and at budget, if awarded.

- County requests the following Proposal and qualification information from all Vendors. The following information will be used to evaluate the qualifications of Vendors. This information is not intended to restrict competition. The intent is to protect County's interests by ensuring Vendor is competent, capable of quality work and financially able to complete The Project it may be awarded.
- Any Proposal submitted must include a properly filled out [RFP Proposal Form](#) which has been signed by an individual authorized to bind Vendor. All Proposals submitted without such signature will be deemed non-responsive. The RFP Proposal Form is located toward the end of this RFP for Vendor's convenience.
- County will consider prior performance on similar projects in assessing Vendor's ability to complete the proposed project.
- Time extensions will not be given to this RFP's deadline.
- Time is of the essence and any Proposal received after the announced time and date for submittal will be rejected. It is the sole responsibility of Vendor to ensure that its Proposal is **received** by the deadline indicated. However, nothing in this RFP precludes the County from requesting additional information at any time during the RFP process.
- Nothing herein is intended to exclude any responsible Vendor or in any way restrain or restrict competition. On the contrary, all responsible Vendors are encouraged to submit their Proposals. County reserves the right to reject any or all Proposals.
- Any material that is to be considered as confidential in nature must be clearly marked as such, on every page, and will be treated as confidential by County to the extent permitted by law, except as follows: by submitting a Proposal, Vendor authorizes County to provide Proposal to the WCITC group as described on County's website(<http://www.rbc.us/wcitic>), and to County's Network Operator, Colorado.Fiber.Community to aide in Proposal evaluation.

Proposal Submission

A physical printed copy of Proposal (which is to include this entire RFP document and a properly filled out "RFP Proposal Form", as well as all attachments and supporting documents) must be submitted in its entirety on the forms furnished by County. The RFP Proposal Form must be signed by a duly authorized agent of Vendor.

An electronic version of the RFP including the "RFP Proposal Form" is available at https://docs.google.com/document/d/1W2GOtm0R7Y6Rcbt6RY-Ni_ev1NAvMKI6mWL3s_5SRU or by



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sending an email request to **BLAKE MOBLEY** at **BLAKE.MOBLEY@RBC.US**. Proposals must be timely **received** in a sealed envelope. Any Proposal received subsequent to the deadline will be rejected and returned to Vendor.

The following must appear on the envelope in which the Proposal is submitted:

- The wording “Rio Blanco Broadband - FTTx Electronics”
- The name and address of Vendor
- The date and time of the Proposal Opening as “Opening 11/9/2105 at 11:15 A.M. MDT”

No alterations, alternatives, or interlineations will be permitted, unless made before submission, authorized through County and initialed and dated. Proposals must be delivered to County as follows:

- **If Mailed or Shipped:**

- Received no later than **4:00 P.M. MDT, on 11/6/2015** at:

Mailing (USPS)	Physical Shipping
Rio Blanco County BOCC PO Box i Meeker CO 81641	Rio Blanco County BOCC 200 Main Street Suite 100 Meeker CO 81641

- If Vendor decides to utilize an express delivery service, please note that overnight services are not always delivered on the next day in County's rural community. This has voided several Proposal submissions in the recent past.

- **If Hand Delivered:**

- If Vendor elects to hand deliver a Proposal it must be received no later than **11:00 A.M, MDT, on 11/9/2015** at the Commissioners’ meeting at the Fairfield Center at 200 Main Street, Meeker, Colorado 81641.

Proposal Opening

- All Proposals will be publically opened by the Commissioners during their meeting at **11:15 A.M, MDT, on 11/9/2015** at the Fairfield Center at 200 Main Street, Meeker, Colorado 81641.
- Vendor presence at the Proposal opening is optional. A decision may or may not be made at this meeting.
- Proposals submitted and opened are deemed valid for 30 days thereafter and cannot be withdrawn.
- Proposal Withdrawal



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- Proposals may be withdrawn prior to opening by sending written notice to County which must be received prior to Proposal opening or by withdrawing the Proposal at the Commissioners' meeting prior to Proposal opening.
- Post Proposal Opening - Electronic Version
 - County will require an electronic copy in either Microsoft Word or Google Docs format. Other formats, such as PDF, will not be acceptable as they do not facilitate County's electronic evaluation process.

Proposal Evaluation and Award Process

- Administrator will present his recommendations to the Board of County Commissioners of Rio Blanco County, Colorado. County may engage Network Operator and/or the WCITC group in Proposal evaluations. Note, by submitting a Proposal, Vendor authorizes County to provide Proposal to Network Operator and the WCITC group, including sections marked confidential.
- 20/20 Decision Matrix. County's decision matrix on this project is called the 20/20 decision Matrix.
 - **20 Year Lookback** - County will evaluate decisions under the assumption that none of current project staff exists in 20 years and apply the question, "Will project staff of 20 years from now determine that we made the best decisions we could at this time?"
 - **20 Year Cost** - What does the decision cost County over a 20 (as well as 40 or 60) year period? Often larger up front expenditures are a more responsible decision if they remove a persistent fee or expensive upgrade path.
- County may, at its discretion, request an interview with any Vendor with notice given via phone or email. Vendor will have two (2) days to accommodate such an interview.
- A Vendor may be selected and contractual negotiations may commence. The selected Vendor will have seven (7) days after notice to arrange for an in-person or by phone meeting, as determined by County.

County's Reservations

County herein expressly reserves the following rights:

- County will strongly consider all input, but ultimately reserves the right to select a final Vendor at its sole discretion.
- County reserves the right to withdraw the entire project or any project element(s) from award consideration or to award individual project elements to disparate Vendors if it is in the best interest of County to do so.
- To negotiate separately with any source whatsoever in any manner necessary, to serve the best interests of County. County does not intend to award a contract solely on the basis of any response made to this RFP or in any way to pay for information solicited or obtained. The information obtained will be used in determining what seems to best serve the interest of County.
- To consider the competency and responsibility of Vendor and/or their proposed Subcontractors in awarding any contract.
- To make the award based on County's best judgment as to which Proposal best meets County's expectations of a project of the highest quality, value, and innovation.
- To negotiate the terms and conditions of the contract, including but not limited to, the description of services and compensation in order to meet County's Project expectations.



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- To make such changes or correction in plans, specifications or quantities of the RFP as County may deem necessary or desirable during the RFP process. County will note said changes electronically in the section "[Post RFP Release - RFP Clarifications](#)". It is Vendor's responsibility to monitor the RFP Clarifications section electronically throughout the RFP and subsequent processes at this website: https://docs.google.com/document/d/1W2GOtm0R7Y6Rcbt6RY-Ni_ev1NAvMKl6mWL3s_5SRU
- To confine its consideration of the several Proposals to one type of design regardless of alternate types of design which may be specified in the RFP and offered in Proposals.
- To waive minor irregularities or minor errors in any Proposal, if it appears to County that such irregularities or errors were made through inadvertence. Any such irregularities or errors so waived must be corrected prior to the execution of any contract which may be awarded thereon.
- To reject any or all Proposals either partially or in their entirety.

Project Description

High Level Overview

Infrastructure Goals: County is completing a Fiber to the Home, Fiber to the Business, Fiber to the Community Anchor Institution (CAI) network in the towns of Meeker and Rangely as well as a Fiber interconnect between these towns. Additionally, County will be connecting Fiber to a tower near both Meeker and Rangely to then feed a rural wireless network across the rural regions of Rio Blanco County.

Vendor will be supplying the electronics to Light all the Fiber in the FTTx project. At a high level, this will include:

- Meeker Co-Location Data Center (mCo-Lo)
 - All electronics for the data center for layers 1 to 7
 - Firewall
 - Layer 2 and Layer 3 switching/routing
 - Both GPON and Active Ethernet (AE) options
- Rangely Co-Location Data Center (rCo-Lo)
 - All electronics for the data center for layers 1 to 7
 - Firewall
 - Layer 2 and Layer 3 switching/routing
 - Both GPON and Active Ethernet (AE) options
- CPE options for typical customer installations
- Meeker to Rangely, Middle Mile Link (mrLink)
 - All electronics necessary
 - Layer 2 and Layer 3 switching/routing
 - Any signal boost or regeneration - if necessary
- Fiber to the Tower (FTTT)
 - All electronics necessary
 - Layer 2 and layer 3 switching/routing from each Co-Lo to that community's adjacent tower



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- Including electronics at the mCo-Lo and Meeker Tower and electronics at the rCo-Lo and Rangely Tower

Service Goals: At a high level, the services to be delivered via the above electronics across the FTTx network are as follows: common Internet service, VOIP, IPTV, POTS, VLAN, MAN by utilizing a combination of AE and GPON solutions with a defined upgrade path to NG-PON2.

Vendor Roles: At a high level, this RFP is requesting Vendor to supply the following regarding the electronics necessary to accomplish the Infrastructure and Services goals of The Project.

- **Design** - A complete design of required electronics - a turn key solution. Even if the electronics spans multiple brands and/or manufacturers.
- **Equipment** - Provide equipment necessary to implement the design even if the equipment spans multiple brands and/or manufacturers. Equipment at the two Co-Lo locations, required to light the mrLink, and to support the initial Meeker and Rangely FTTT implementations will be included in the initial purchase. CPE will be selected via this RFP process but purchased through a separate agreement with Network Operator. It is anticipated Network Operator will purchase CPE on a success based basis with an initial order estimated at 500 installs.
- **Implementation Services** - Fully implement the Design including all required software and licensing. There are to be NO extra fees required to meet The Project's electronic goals beyond those represented or those which Vendor could reasonably anticipate. No hidden fees!
- **Testing Services** - Adequately Test the Design Implementation to County's satisfaction.
- **Training Services** - Train County and County partners enabling them to operate, maintain, and manage the electronics of The Project including all provisioning and service interconnects.
- **Maintenance**- Provide an approved maintenance or support plan covering all electronics, even if the electronics spans multiple brands and/or manufacturers. Support is to include both tech support, as well as hardware warranty, repair, and replacement.



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Timeline Goals

- October 14, 2015
 - RFP Release
- November 9, 2015
 - RFP Response deadline and RFP opening
 - Vendor will have arranged for County to Tour up to 3 of Vendor's Clients as per this RFP.
 - County Actions Over Next two Weeks:
 - Evaluate Responses, and select most likely candidate(s) for further investigation.
 - Tour of likely candidate(s)
 - Commence negotiations of contract language with likely candidate(s)
- November 23, 2015
 - Anticipated Contract award date and signing
 - County
 - County will have both Co-Los ready for FTTx Fiber termination and testing, including Fiber raceway, ladders, ducts, and racks.
 - County will provide ONLY Home Run cable management, splice cabinets, patch panels, and patch cords. Home Run Fiber termination is County's responsibility.
 - County will be responsible for providing Vendor with the loss budget and OTDR results of the Home Ran Fiber (from Co-Lo to handhole). Upon request, County will supply Drop Run Fiber test results for a sample of Drops or problematic Drops. Vendor will be responsible for testing and all loss budget of CPE and CPE connection, as well as all Co-Lo OLT equipment, splitters, patch cords, and patches.
 - Vendor
 - Vendor is responsible for all testing and loss budget other than Home Run Fiber.
 - All necessary patch cords and splitters will be supplied by Vendor.
- November 30, 2015
 - CAI's Lit
 - This is critical for preparation for County's remodel of its Courthouse and move to County's new Justice Center. All of the current Meeker CAI's that transmit telecommunications services to or across the Courthouse need to be functional over Vendor's equipment.
 - mrLink Lit
 - This is the latest date for this goal. Moving it earlier is more ideal.
- December 7, 2015
 - All Lit - All services across all topologies (GPON, AE) are Lit or able to be Lit.

Liquidated Damages

The following is a suggested and preferred clause for the Agreement.



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Liquidated damages in the amount of \$500.00 per day shall apply for each and every day that goals as described in the Timeline section of this RFP are not met. If the failure to meet a timeline goal is County's fault, an extension of one day, per day of delay will be granted to that Timeline element. Liquidated Damages will be deducted from County's final payment to Vendor.

Resources

The information in this section is intended to help Vendor understand the scope of The Project.

- Demographics
 - Rio Blanco County has 6807 residents according to [Here](#) with about 650 students in Meeker school district, and about 450 in the Rangely school district.
 - There are two municipalities in Rio Blanco County, Meeker and Rangely.
 - Meeker's population was 2493 in 2013 according to [Here](#).
 - Rangely's population was 2433 in 2013 according to [Here](#).
- FTTx Fiber
 - Fiber route miles (does not include Drop Runs)
 - **IN MEEKER** - [Buried Plant](#) - Total Route Miles 25.40 (40.86 km)
 - **IN RANGELY** - [Buried Plant](#) - Total Route Miles 26.34 (42.39 km)
 - Rio Blanco County is approximately 3600 square miles. Here are some Google Map Links for Vendor's' convenience.
 - [Rio Blanco County](#) with [Topology Overlay](#)
 - [Meeker](#) with [Topology Overlay](#)
 - [Rangely](#) with [Topology Overlay](#)
 - [Meeker to Rangely Drive](#) with [Topology Overlay](#)
 - All FTTH Fiber including Drop Runs is buried, single mode Fiber
 - Every block of Meeker & Rangely will have Home Run Fiber equal or in excess of 110% of the number of homes, businesses, and units in a multi unit dwelling (such as duplex = 2, quadplex = 4, hotel with 10 rooms and an office = 11).
 - Every CAI premises will have a minimum of 4 additional strands of Home Run Fiber.
 - Should PON be utilized, it is the intention to place all initial splitters in the Co-Los.
 - Splitters of size 16 or less shall be used.
- CAI List
 - A list of the CAI's and their premises can be found [Here](#).

Task & Responsibilities

County, WCITC Group, and/or Network Operator shall make every effort to review Vendor's Proposal for completeness but the final responsibility for a complete submittal shall be solely upon Vendor. If it is not clear whether County or Vendor will provide a necessary Task or Responsibility to The Project or if any Task or Responsibility is not covered, it will be up to Vendor to fulfill the Task or Responsibility. Vendors are strongly encouraged to ask County for any necessary clarifications during the RFP process.



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Task	County Will...	Vendor Will...
Home Run Fiber	<p>Provide a building with SC terminated Home Run, single mode Fiber Optics racked up and mounted into Fiber patch panels.</p> <p>Outside plant optical Fiber termination, Fiber splicing, optical splitters and a Fiber patch panel with SC-UPC or SC-APC connectors shall be provided by County or others. The patch panel is anticipated to be located in the same equipment rack or nearby Vendor's terminal.</p> <p>Budget Loss and OTDR results as performed by Circle H Construction, will be made available to Vendor for Home Run Fiber.</p>	<p>Perform any required Loss or other testing beyond County's obligation to the left.</p> <p>Vendor shall provide Fiber patch cords from Vendor's terminal to the patch panel for transport / feeder Fibers to remote cabinets, and from the OLT ports to the optical splitters for distribution in the Co-Lo serving area (or for an active optical Ethernet architecture, from each output port to the Fiber patch panel).</p>
Drop Run Fiber	<p>Drop runs will be one strand of SC terminated single mode Fiber Optics ran to the inside of the Customer premises.</p> <p>Provide Vendor, upon request, with loss information on a representative sample of Drop Runs (not to exceed the lesser of 20 Drops or 10% of implemented Drops) or on a few specific Drop Runs (up to 20) where needed.</p>	<p>Perform any required Loss or other testing beyond County's obligation to the left.</p>
Co-Lo Physical Plant	<p>Provide all necessary racks (two and four post), cable management,</p>	<p>Design, Implement, Test, Train, and Support, all required UPSes, AC to DC power plant, PON splitters, all patch cords. Vendor shall provide power and grounding connections to</p>



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	<p>above rack ladders and/or Fiber raceway, HVAC, Generator, and AC power with a ground bar and fuse panel.</p> <p>County will provide two 30-amp (or larger as Vendor specs demand) breakers in the rack fuse panel.</p> <p>The majority of equipment will be housed either in an environmentally controlled Co-Lo or at the subscriber's premises. County anticipates deploying future equipment in equipment huts and cabinets that may or may not include environmental control.</p>	<p>their shelves as necessary, to the fuse panel and ground bar.</p> <p>Vendor shall state the power and fusing requirements in the rack fuse panel for their shelf</p> <p>Vendor shall provide the required dimensions of their shelf and the required AC power feeds. Vendor will be required to supply any needed AC to DC power conversion and distribution plant. Vendor shall state maximum and typical power draws, at startup and in continuous operation for the anticipated initially deployed equipment, as well as shelf maximums.</p> <p>Specify to County the estimated AC power needs that would be anticipated for the first two years of operation based on anticipated growth (see Scenarios) take rate and anticipated technology upgrades such as NG-PON2. Specify the AC to DC interface requirements (physical connection type, quantity, placement, Amp/Volt/Watt, etc.)</p> <p>Vendor shall explicitly state in their Proposal the recommended environmental conditions for normal operation of their equipment.</p>
<p>Co-Lo OLT</p>	<p>Provide all necessary rackspace.</p>	<p>Design, Implement, Test, Train, and Support, all OSI Layer 1 through 7 electronics and device interconnecting cabling to support the goals of The Project within the scope of Vendor's solution. Including but not limited to: Chassis, AE and GPON devices, Firewalls, routers, switches, splitters, patch cords, adapters, power cords, power cabling, mounting hardware, software, and licensing.</p> <p>Transport to subscriber premises ports shall support a minimum of 1 Gbps full duplex using standard Ethernet handoff. Acceptable technologies prevalent today include 2.4/1.2 Gbps GPON (max 16 subscribers per PON) and active Ethernet with 1 Gbps per subscriber. County may be interested in an architecture that combines both PON and active elements. Since all Fibers will be Home Run to OLT locations, GPON designs shall collocate splitters with OLT electronics.</p> <p>Optical transport capabilities between the office shelves and any future remote cabinets shall be included in designs provided by Vendor. Backbone connections (node to node and uplink to service provider equipment) must support a minimum of 10 Gbps and redundant connectivity designs mentioned earlier.</p>



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		<p>Vendor shall provide appropriate failure protection for critical equipment in their FTTx host configuration (OLT), such as redundant power supplies, multiple switching processors, etc. Complete office and cabinet solutions must support multiple redundant network designs at Layers 1 & 2, such as rings, collapsed rings, and 1+1 protection (active/standby links between nodes).</p> <p>Individual subscriber ports do not require redundancy, but must automatically return to service after a power or service failure.</p> <p>OLT's must include a minimum of 4 available (spare) 10 Gbps transport (node-to-node) ports at each OLT location to allow for future growth.</p> <p>Vendor shall state any specific requirements or options for advanced services such as: Carrier Ethernet 2.0 features, interoperability with other management systems, and interfaces to non-standard transport equipment that may be of interest to County and that can be optimized by Vendor.</p> <p>Vendor shall provide a minimum of four 1000Base-T interfaces and one 10 Gbps interface (SFP+) for interconnecting with service provider equipment at each office. These ports must support any combination of data, voice, video, and private VPN/VLAN traffic, along with 802.1q VLAN tags and 802.1ad VLAN stacking.</p> <p>Vendor shall describe any inherent capabilities of the OLT equipment for passing user defined environmental alarms from any equipment site. These alarms may include dry contact closures. The severity of the environmental alarm (Major, Minor, Critical) shall be definable by County. The termination of any environmental alarms shall be the responsibility of County. Alarm notifications sent via SMTP or SMS to multiple parties are preferred.</p> <p>Vendor may also suggest third-party alarm aggregation solutions that integrate into any EMS or OAM&P system provided by Vendor.</p>
Protocols and Services		<p>Vendor shall outline available link aggregation and failover/redundancy capabilities, such as LACP (802.3ad).</p> <p>Vendor shall describe multicast capabilities of the proposed solution. This should include any limitations of, enhancements to, or customization of IGMP behavior on the</p>



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network.

OLT and ONT equipment must support SIP for voice transport and distribution. Vendor shall describe existing interworking experience with the SIP protocol and elaborate on any Vendor-specific enhancements or options.

Vendor shall describe any options and features for provisioning special circuits (such as DS1) off of an ONT, either a standard ONT or a special unit with or without third-party equipment.

Vendor shall describe any known incompatibilities with CLASS, custom calling or enhanced voice services, such as a Caller ID indicator light on a subscriber's telephone and Caller ID functionality on an incoming call when a subscriber is off-hook.

Vendor shall describe any and all options for support of TR-069 remote provisioning of customer premises devices.

Vendor shall fully describe the maximum bandwidth that can be provided (and dedicated) to each shelf, card slot, and ONT-feeding port. Bandwidth shaping and prioritization on a per-port and per-service (per-VLAN) level is a requirement.

Vendor shall describe traffic-shaping and prioritizing capabilities along with other VLAN and QoS (Quality of Service) options within Vendor's equipment deployment, and explain any benefits or problems that may arise when interconnecting with third-party equipment. This description should also include reporting capabilities of the system regarding usage statistics, etc...

Vendor shall describe security features and options for local and remote access to the OAM&P system, including authentication of users and access control levels for different users.

Vendor's equipment shall produce Minor, Major and Critical alarms in the event of an equipment or path failure or malfunction. Preferably, visual near end and far end indicators shall be located on each shelf or device.

Vendor shall describe MIB and Ethernet MIP capabilities of the system and endpoints.

If Vendor states that a specific service is provided Vendor shall be required to provide any and all hardware and software required to provide that service, regardless of the items and quantities shown (or not shown) on any parts lists



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		included with Vendor's Proposal.
mrLink Electronics	<p>Provide all necessary rackspace. Provide one pair (2 strands) of SC terminated, single mode Fiber between the mCo-Lo and rCo-Lo over a run distance of approximately, 65 miles via two strands of Single Mode. County will soon have exact distance, OTDR, and db Loss test results. . There is a single, optional, signal regeneration point, approximately 20 miles from mCo-Lo toward the rCo-Lo with power available.</p> <p>If signal regeneration is required, County will provide AC power, and a cement pad, gravel, or bare dirt as required.</p>	<p>Design, Implement, Test, Train, and Support, <u>all</u> OSI Layer 1 through 7 electronics and device interconnecting cabling to support the goals of The Project within the scope of Vendor's solution. Including but not limited to: Chassis, AE and GPON devices, firewalls, routers, switches, splitters, optical amplifiers, patch cords, adapters, power cords, power cabling, mounting hardware, software, and licensing.</p> <p>If signal regeneration is required along the route, perform all of the above as well as: Design, Implement, Test, Train, and Support, all required UPSes, AC to DC power plant, PON splitters, all patch cords and any required shelter or cabinet.</p> <p>The shelter or cabinet will include any necessary racks, shelves, mounts, HVAC, AC to DC power plant, etc.</p> <p>Solution must support minimum of 10 Gbps.</p>
CPE	<p>Drop runs will be a single strand of SC terminated single mode Fiber Optics ran to the inside of the Customer premises.</p>	<p>Design, Implement, Test, Train, and Support, the CPE equipment, mounts, cables, and accessories necessary to provide the customer experience via AE, GPON, or NG-PON2 as selected by County. County may select any or all of Vendor's eligible CPE devices such as ONTs or AE CPE, such as CPE's with or without POTS ports, CPE's with or without wireless 802.11, etc.</p> <p>Design, Implement, Test, Train, and Support an 8 hour and 24 hour UPS solution at the premises for the CPE including all necessary mounts, shelves, etc.</p> <p>Vendor shall provide a lineup of ONT's expected to be generally available at project launch.</p> <p>The minimum required physical interfaces for a single residence NID / ONT include two POTS interfaces (RJ-11) and two 1000Base-T (gigabit) Ethernet interfaces (RJ-45). Vendor shall describe ONT's native VOIP and IPTV capabilities.</p> <p>The minimum required physical interfaces for business and</p>



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municipal locations is two POTS ports and four gigabit Ethernet ports. Some business subscribers may require ONT's that support eight (8) or more POTS ports, T1/DS1 ports (RJ-45) with PWE3 capability, and/or customer-facing SFP ports.

Vendor may describe features and ONT options for interfaces and provisioning of traffic over coax or other non-Cat 5e wiring in the home, such as MOCA, HPNA 3.1, or G.hn support.

Vendor shall describe options for pre-shipping ONT / NID housings, for installation by a third party at the subscriber premises, and later installation and turn-up of the electronics.

Vendor shall describe options for powering subscriber ONTs. County anticipates mounting most ONTs and power supplies indoors, but needs options for ONTs mounted on the outside of the premises. Most backup batteries are expected to be mounted indoors.

Vendor shall describe the requirements for battery storage, shipment, and installation to optimize the performance and life of the batteries, including any proposed process for just-in-time shipment of batteries and on-site storage (trickle charging, etc.)

Each ONT must be identified as able to operate on Active Ethernet, GPON, or either (without changing optics).

Each ONT must meet the standards-based Full Service Access Network (FSAN), ITU-T GPON G.984.1 and IEEE 802.3 AE standards.

Each ONT must support lifeline service power source with in-home battery backup and alarm monitoring.

Each ONT must have complete OAM&P management system including support.

Each ONT must support multiple data service profiles.

Each ONT must support the following Traffic Management and Quality of Service(QOS) items:

- Multiple 802.1q VLANs
- 802.1p Service Prioritization
- 802.1ad (Q-in-Q) Tagging
- Per-Port Traffic Shaping (downstream, towards customer)



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		<ul style="list-style-type: none"> Rate Limiting (upstream, towards OLT) (Ingress policing on all ports a plus but not required)
MDU		Vendor shall describe any options and features for ONTs at MDUs, especially for small apartment buildings both with and without indoor mounting space.
Compatibility		Vendor shall list manageable customer premises devices (Ethernet switches or routers) that are certified for use with Vendor's solution for providing and provisioning additional Ethernet ports and distribution within by CAls. Vendor may provide quotations for such devices.
FTTT (Fiber to the Tower)	<p>Provide all necessary rackspace and AC power at Co-Lo and Tower shed. Provide one pair (2 strands) of SC terminated, single mode Fiber between the mCo-Lo and Meeker Tower and between the rCo-Lo and Rangely Tower.</p> <p>Rangely's run distance is approximately 1 mile.</p> <p>Meeker's run distance is approximately 2 miles.</p>	<p>Design, Implement, Test, Train, and Support, all required UPSes, AC to DC power plant, PON splitters, all patch cords at both the Co-Lo and Tower's Shed.</p> <p>Design, Implement, Test, Train, and Support, <u>all</u> OSI Layer 1 through 7 electronics and device interconnecting cabling to support the goals of The Project within the scope of Vendor's solution. Including but not limited to: Chassis, AE and GPON devices, firewalls, routers, switches, splitters, patch cords, adapters, power cords, power cabling, mounting hardware, software, and licensing.</p>
Redundancy to mrLink	In the near future, County will wirelessly connect the two FTTT towers. County will supply all wireless gear and links as a complete path.	Design, Implement, Test, Train, and Support, <u>all</u> OSI Layer 1 through 7 electronics and device interconnecting cabling to support the goals of The Project within the scope of Vendor's solutions. Including but not limited to: Chassis, AE and GPON devices, firewalls, routers, switches, splitters, patch cords, adapters, power cords, power cabling, mounting hardware, software, and licensing to enable the use of this redundant mrLink when it is available.
Middle Mile Interface	Provide a middle mile interface or interfaces to services coming into Rio Blanco County such as Internet, VOIP, IPTV, etc. as either SC Singlemode Fiber, RJ45 Copper interfaces, or SFP or SFP+ ports.	<p>Design, Implement, Test, Train, and Support, <u>all</u> OSI Layer 1 through 7 electronics and device interconnecting cabling to support the middle mile Service Provider connections of The Project within the scope of Vendor's solution. Including but not limited to: Chassis, AE and GPON devices, firewalls, routers, switches, splitters, patch cords, adapters, power cords, power cabling, mounting hardware, software, and licensing.</p> <p>Support all common services and protocols to deliver middle</p>



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		<p>Mile service over the FTTx infrastructure of The Project. This includes, but is not limited to, Transport, Internet, VOIP, IPTV, POTS, voice T1s, data T1s, MPLS, VLANs, etc.</p>
Shipping	<p>Upon coordination with County, County may temporarily store Vendor's equipment at a County designated shipping site. The site does not have a loading dock.</p>	<p>Vendor shall be responsible for transporting and loading / unloading the equipment at all installation sites.</p>
Implementation	<p>County will provide our Network Engineer and our Network Operator to explain necessary interconnection points, protocols, etc. County will provide access to the required Co-Los, Tower Sheds, and a limited number of "test" customer premises.</p> <p>County is NOT required to provide any physical assistance, but may do so at its sole discretion.</p> <p>Network Operator will complete or will cause to have completed customer premises installations behind a small number of "test" cases.</p>	<p>Vendor will provide all implementation work, testing, training, and support. Vendor is responsible for all of Vendor's travel, meal, and lodging, as well as all other ancillary expenses throughout all aspects and stages of The Project.</p> <p>Installation shall be performed by competent personnel who have received all manufacturer-recommended training necessary to install, turn up, and test the equipment.</p> <p>Vendor shall provide static protection (i.e. wrist straps, etc.) as recommended by the manufacturer to properly protect static sensitive equipment.</p> <p>Vendor shall describe all recommended installation procedures, best practices, and any support equipment.</p> <p>Customer premises installations will be limited to a small number of installs to be used as base or reference installations.</p>
Software		<p>Vendor shall furnish a minimum of three licenses of a PC-based remote Operation, Administration, Maintenance, and Provisioning (OAM&P) system on County-provided PCs. The proposed system shall be a Graphical User Interface (GUI) that supports the broadest PC base possible, such as a web-based tool or Java-based app. Support for Windows 7 (and later) is required. (For browser-based tools, Google Chrome support is required at a minimum, with support for Safari and Microsoft Edge a plus.) The system shall also be capable of accepting commands from a command line interface for complex provisioning. If the OAM&P system requires a server, the vendor shall furnish the server along with any</p>



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		<p>supporting licenses (such as server operating system or database). If the system is cloud-based or capable of such, the vendor shall furnish necessary licensing to support an equivalent of three access licenses.</p> <p>County will consider a “Northbound” interface for integrating network management into third-party tools. Please list any options and third-party network management packages and standards that Vendor’s equipment will support.</p>
Documentation		<p>Vendor shall furnish a minimum of one complete hard copy set of all recommended documentation for the equipment and software provided, plus a minimum of two sets on digital media or an on-line link to same.</p> <p>Vendor may be requested to describe and demonstrate online capabilities for information and support sources.</p> <p>Vendor shall provide a complete unit cost breakdown of all equipment provided on this job for Continuing Property Record (CPR) purposes. This breakdown shall be on a module sub-assembly basis (i.e. plug-in cards, shelves, bays, etc.) and must be provided within 60 days after turnover of the equipment. No consideration will be given to closing out this contract before the CPR data is received and verified for accuracy. The CPR data shall be provided in soft copy and readable hard copy form.</p>
Backup		<p>Vendor shall provide a means to backup and restore all configuration data and other service-affecting information in the event of equipment memory loss. County prefers an automated system if available.</p>
Testing		<p>Vendor shall describe OLT and ONT internal troubleshooting capabilities and recommended procedures, and a list or description of recommended external test equipment.</p> <p>Vendor shall perform all acceptance tests in the presence of County or the Network Operator, after notifying County at least three (3) days before the equipment will be ready for such tests.</p> <p>In addition to all manufacturer-recommended acceptance tests, this specification shall require (as a minimum):</p> <ul style="list-style-type: none"> ● Manual and automatic failure and restoration simulations on a sample of subscriber circuits (a minimum of 1 circuit per OLT shelf and interface type) ● Tests of system alarms, network monitoring, and provisioning mechanisms (CLI, GUI, EMS) ● Integration with third-party Ethernet equipment (i.e.



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		<ul style="list-style-type: none"> switches, routers, MEF transport, etc.) • External (third party) access to configuration and provisioning data and network utilization <p>Vendor shall be required to provide any and all equipment required for the testing period, and shall provide copies of all manufacturer-recommended test results.</p>
Warranties		<p>Vendor shall describe all applicable system warranties specifying what is included, what can be purchased in advance, and annual renewal costs for hardware. There is a significant preference for all warranty requests and RMAs to be facilitated directly by Vendor.</p>
Equipment Life		<p>Vendor shall not propose or use equipment known to be discontinued by the manufacturer or having a known EOL within 2 years after installation.</p> <p>Vendor shall describe any options or plans for future upgrade of hardware modules or equipment, especially any potential in-service upgrade procedures of items such as upstream optics, on-board memory or processing capabilities.</p>
Training	<p>County will provide relevant staff and a physical training venue with computers, phones, Internet access, and conference room environment (multiple chairs and a table).</p> <p>Staff will all have a basic understanding of traditional networking but Vendor should consider all supplied Staff as having no background in GPON or Vendor's particular solution.</p>	<p>Vendor will train up to five (5) County designated individuals how to manage, maintain, provision and successfully operate Vendor's solution to The Project using a mix of in-person classroom-style, webinar-style, and/or boot camps as Vendor specifies.</p>
Support		<p>Vendor will supply all support required by County staff to properly operate Vendor's solution to The Project. As an example, this includes firewalls, splitters, OLTs, ONTs, signal regeneration, software, etc. County prefers this even if solutions are of a different brand. County prefers a one-stop-shop for support of Vendor supplied solution to The Project.</p> <p>Vendor shall describe all applicable and all available support</p>



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		offerings, specifying what is included, what can be purchased in advance, and annual renewal costs for hardware and software support, whether provided by Vendor directly or via third parties. County has a strong preference that Vendor supply all technical support, even for third party equipment.
Tour	County will pay for all travel, meal, lodging expense to tour up to three of Vendor's clients who are using a solution similar to that proposed to the County.	<p>Vendor will identify at least three (preferably 5) clients from which County may select up to three (3) to tour. Vendor will facilitate County's visit of up to five (5) staff for up to four (4) hours at Client's site. Vendor will not be present during the tour, but may, at Vendor's option, have an employee in the same town for a pre and/or post conversation or an employee available by phone.</p> <p>Vendor will select clients to balance minimizing County's travel time with clients as similar to County's size and solution as possible.</p>

RFP Proposal Form

Vendor's, please fill out answers as specified below, and only as specified below. Please place answers electronically inside the provided boxes.

Thorough but concise responses are appreciated. If Vendor's answer is "Understood" or "Will Comply" then that is all that need be recorded. Conversely, if a proper response requires several paragraphs, then please write them. These electronic boxes will expand to fit nearly any response. If a proper response requires diagrams, tables, or other elements that cannot be adequately presented in the electronic boxes, Vendor shall provide such in an addendum to the response and shall indicate the presence of such an addendum in the appropriate electronic box.

County, WCITC Group, and/or Network Operator shall make every effort to review Vendor's Proposal for completeness but the final responsibility for a complete submittal shall be solely upon Vendor. If it is not clear whether County or Vendor will provide a necessary task or element to The Project or if any task or element is not covered, it will be up to Vendor to fulfill the task or element. Vendors are strongly encouraged to ask County for any necessary clarifications during the RFP process.

Please do **NOT** add or remove cells to the tables below as the electronic version will be copy/pasted for easy comparison between respondents.

RFP PROPOSAL FORM
Title: Rio Blanco Broadband - FTTx Electronics
Date Please provide the date this form was submitted by Vendor to County.



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Company Name

Company Full Legal Name	
Company Working Name	
Legal Physical Address Include Street, City, State	
Years in Business	
Years in business under current name:	
Under what other former names has the business operated:	
Type of business organization: (Sole Proprietorship, Partnership, Limited partnership, Joint Venture, Corporation)?	
If Corporation, State in which incorporated?	
Date organization was formed:	
Name of President or Owner:	
Name(s) of Partner(s):	

Primary Vendor Contact

Name	
Title	
Email	
Office Phone	



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Cell Phone _____

Vendor Authorized Signature

The undersigned, hereby proposes to be considered for the arrangement listed in the County's RFP, to be delivered in accordance with the RFP specifications. By signing below, the undersigned hereby acknowledges that he is authorized to execute this Proposal on behalf of the Proposer, that Proposer has read and understands the terms and conditions contained in this RFP, and that Proposer accepts and agrees to be bound by the terms and conditions of this RFP. _____

BEING DULY SWORN, THE UNDERSIGNED CERTIFIES THAT THE INFORMATION PROVIDED HEREIN IS TRUE AND SUFFICIENTLY COMPLETE SO AS NOT TO BE MISLEADING.

Signature _____ Date _____

Printed Name _____ Title _____

Subscribed and sworn before me this _____ day of, _____, 2015, by _____ as _____ of _____.

Notary Public: _____

My Commission Expires: _____

Narrative (Optional)

Providing a general narrative summarizing Vendor's Proposal or business is optional as the Scenario question below may provide Vendor with this opportunity. Choice is up to Vendor. This response may be provided by attachment rather than filling in the following box. Post Proposal opening, the attachment will be made available in Microsoft Word or Google Document format.



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Tasks & Responsibilities

After reading the [Tasks & Responsibilities](#) section of this RFP. Are there any Vendor comments? Unless explicitly stated here, Vendor agrees to accommodate and accomplish all tasks and elements of The Project as per the Tasks & Responsibilities section.

Detailed Questions & Vendor's Answers

Please comment in the third column, below.

Area	County's Question	Vendor's Answer
GPON	What is Vendor's current GPON throughput (up and down)?	
	What is Vendor's GPON performance upgrade timeline (what speed will be available, when)?	
	What are the GPON distance to split to optic class options at this time?	
	What makes Vendor's GPON unique from its competitors?	
NG-PON2	What is Vendor's current NG-PON2 throughput (up and down)?	
	What is Vendor's NG-PON2 performance upgrade timeline (what speed will be available, when)?	
	What are the NG-PON2 distance to split to optic class options at this time?	
	What makes Vendor's NG-PON2 unique from its competitors?	
ONTs	What is Vendor's ONT failure rate (number per time, mean time between failures)?	
	How does Vendor's solution deal	



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	with Rogue ONTs?	
	If a 16 CPE PON has a power failure at half the customer premises, what impact will this have on the other customers?	
	What makes Vendor's ONTs unique from its competitors?	
AE	What is Vendor's maximum AE bi-directional Speed at this time?	
	What is Vendor's AE performance upgrade timeline (what speed will be available, when)?	
	What makes Vendor's AE unique from its competitors?	
OLT	List Vendor's standard Chassis and how many blades or Modules it can support and how many Us the chassis takes up in a rack.	
	What makes your chassis unique from your competitors?	
	What makes your OLT blades/Modules unique from your competitors?	
	What is the bottleneck to performance in your solution? Please list both the component and the throughput. NOTE: EVERY SOLUTION has a bottleneck! No solution can provide infinite throughput!	
	List Vendor's blades/Modules available per Chassis.	
Hardened?	What are the environmental ranges for all data center hardware components such as OLT, Blades or Modules, Firewall, Routers, Switches, etc.?	



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Management Software	What is your OAM&P and EMS software called? And what does it do (ONT configuration, billing, etc.)	
	What makes it unique from your competitors?	
	What is the user interface (web, mobile App, Windows Program, CLI, etc.)?	
	What requirements exist for the software (if Web - Java, Shockwave, etc.), If Windows (C++ extensions, etc.), etc.?	
	Can the software run on a VMWare server?	
	Is the software cloud based or is there a cloud or SaaS option?	
	What other software is available in support of Vendor's solution? Such as a separate billing module/software, etc.	
Clients	How many clients does Vendor currently have in the continental U.S. that use a solution similar to that proposed?	
	How many clients does Vendor currently have worldwide that use a solution similar to that proposed?	
	How many clients does Vendor currently have in Colorado that use a solution similar to that proposed?	
	If County were to ask your current clients, "Should we use GPON, AE, or a hybrid mix?" What would they say?	
Implementation	Approximately how many staff will Vendor bring on sight to implement the solution and what is the proposed timeline for	



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	implementation?	
Training	How does Vendor propose to train the five (5) County identified staff? In Co-Lo, In-person classroom style, webinar style, and/or boot camps as Vendor specifies. How will training be staged across these options if more than one are used? And how long will each training last?	
	All good training requires an initial orientation, then a period of use, followed up by several hands on, Q&A training sessions where complex and detailed questions can be answered. How will Vendor accomplish this?	
Support	What are Vendor's support contact methods (phone, chat, remote control, in-person) options? What are the days/hours of available support per each? What is County's anticipated delay in receiving support per each?	

Scenario

This is the most impactful question in this RFP!

Create a total, turn-key solution for the following scenario (all components and all pricing including a final price), that Vendor thinks would be a best fit to solve the scenario and best meet the overall goals and needs of this RFP.

Vendor may propose a hybrid AE/PON, an AE, some other solution or multiple solutions Vendor believes best meets County's needs.

This response should be provided by attachment. Post Proposal opening, the attachment will be made available to County in Microsoft Word or Google Document format.

- All speeds in Mbps or Gbps are to be symmetric (so identical upload and download).
- Able to serve the following in both Meeker and Rangely (assume the two service areas are identical so all figures below require two identical solutions, one for mCo-Lo and one for rCo-Lo).
 - 200 homes at 100 Mbps
 - 100% want Internet, 50% want POTS, 25% want IPTV



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- 50% (half with POTS half without) want 802.11ac
- All fed via GPON over splitters located at the Co-Lo.
 - Max splitter size allowed is 16-way split
- 100 homes at 25 Mbps
 - 100% want Internet, 50% want POTS, 25% want IPTV
 - 50% (half with POTS half without) want 802.11ac
 - All fed via GPON over splitters located at the Co-Lo.
 - Max splitter size allowed is 16-way split
- 50 homes at 1 Gbps
 - 100% want Internet, 50% want POTS, 25% want IPTV
 - 50% (half with POTS half without) want 802.11ac
 - All fed via AE
- 75 businesses at 100 Mbps
 - 100% want Internet, 50% want POTS
 - 50% (half with POTS half without) want 802.11ac
 - All fed via AE
- 25 business at at 1 Gbps
 - 100% want Internet, 50% want POTS, 50% want VOIP
 - 50% (half with POTS half without) want 802.11ac
 - All fed via AE
- MDUs
 - 10 Apartment complexes
 - Average of 20 units (range from 5 to 40) plus offices
 - The offices (typical quantity 1 or 2) at 100 Mbps
 - 100% want Internet, 50% want POTS
 - 50% (half with POTS half without) want 802.11ac
 - All fed via AE
 - 30% of units at 100 Mbps
 - 100% want Internet, 50% want POTS, 25% want IPTV
 - 50% (half with POTS half without) want 802.11ac
 - All fed via GPON over splitters located at the Co-Lo.
 - Max splitter size allowed is 16-way split
 - 60% of units at 25 Mbps
 - 100% want Internet, 50% want POTS, 25% want IPTV
 - 50% (half with POTS half without) want 802.11ac
 - All fed via GPON over splitters located at the Co-Lo.
 - Max splitter size allowed is 16-way split
 - 10% of units at 1 Gbps
 - 100% want Internet, 50% want POTS, 25% want IPTV
 - 50% (half with POTS half without) want 802.11ac
 - All fed via GPON over splitters located at the Co-Lo.
 - Max splitter size allowed is 16-way split
 - Note: All MDU's in The Project are still Home Ran per unit of the MDU. Initially no splitters will exist in the field.
 - Duplexes, Quadplexes, and "Mother-in-Law" suites are considered handled in the "homes" count in the section above and are not included here in the MDU section.
- CAI's
 - Each CAI's Primary building below needs



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- 1 Gbps
- 100% want Internet, 50% want POTS, 10% want VOIP
- 25% (half with POTS half without) want 802.11ac
- All fed via AE
- ALL CAI Buildings below need
 - MAN connection between all of its buildings for internal data/transport purposes
 - 25% of the above prefer AE if available at the 10 Gbps speed
 - 25% of the above want 1 Gbps AE
 - 50% of the above prefer to Light the MAN strands with their own equipment.
- rCo-Lo List
 - Town of Rangely - 7 Buildings
 - Hospital - 2 Buildings
 - School - 7 Buildings
 - CNCC - 5 Buildings
 - Rec Center - 5 Buildings
 - Fire Department - 2 Buildings
 - Water District - 2 Buildings
 - County - 8 Buildings
- mCo-Lo List
 - Town of Meeker - 17 Buildings
 - Sanitation - 2 Buildings
 - Fire Department - 2 Buildings
 - Hospital - 2 Buildings
 - School - 6 Buildings
 - Rec Center - 6 Buildings
 - County - 12 Buildings
- Business Loops
 - There are two rings in each community. County would prefer a redundant connection for select customers on these rings. County prefers a LAG style solution in which both routes are utilized at all times, preventing a surprise failure when the backup route is needed during an outage.
 - Provide a solution to accommodate such loops.
- mrLink
 - Provide a primary solution that best meets these goals. Vendor may choose to provide alternate solutions with alternate pricing clearly described.
 - Goals in Order of Preference
 - Connect up the mCo-Lo and rCo-Lo over the, approximately, 65 miles via two strands of Single Mode. County will soon have exact distance, OTDR, and db Loss test results.
 - Minimum of 10 Gbps (Preference for more speed such as four 10 Gig waves, or a single 40 Gbps.)
 - Solution without the need for a regeneration point has preference. Regeneration point is available approximately 20 miles from mCo-Lo to rCo-Lo.
 - Solution that provides per strand redundancy of some kind (where one strand can fail and the other remain up)
- FTTT



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- Provide a primary solution that best meets these goals. Vendor may choose to provide alternate solutions with alternate pricing clearly described.
- Goals in Order of Preference
 - Connect up the mFTTT and rFTTT over no more than 2 miles via two strands of Single Mode.
 - Minimum of 1 Gbps (Preference for more speed such 10 Gbps)
 - Solution that can use the two FTTT along with the interconnecting wireless between the FTTT (County supplied) as an automated, hot-swap redundancy for the mrLink.
 - Preference for ability to separate/divide bandwidth for multiple purposes or clients such as multiple 1 Gbps waves or thorough VLAN options.
- Support
 - Goals for support in order of preference:
 - Vendor will support the ENTIRE solution both Vendor brands/models, as well as required third-party devices and parts.
 - Vendor contracts a third-party partner to provide the ENTIRE solutions support
 - Vendor contracts a single third-party partner to provide all support other than Vendor's equipment
- Total Solution
 - Solution should include EVERYTHING needed. Please read the RFP thoroughly, unless County has stated explicitly that an element of the solution will be provided, Vendor is to assume that element will be Vendor supplied and Vendor's responsibility. Questions from Vendor to County are encouraged for clarifications.
 - To accomplish a "Total Solution," Vendor is to supply a recommended list of all necessary on-site spare equipment for The Project.
 - A few examples (not a thorough list) of such Vendor elements to be included follow:
 - All hardware not otherwise mentioned as County supplied, such as screws, mounting gear, grounding gear, UPSes, generator power interconnects, cords of all types, jumpers, AC to DC power conversion/plant, fans, chassis, splitters, boosters, injectors, switches, routers, firewalls, manpower, freight, travel, room, board, etc.
 - If signal regeneration on the mrLink is required, then Vendor is to supply the entire solution: outdoor cabinet, pad, equipment, optics, etc.
 - County understands that only a few traditional GPON Vendors supply their own layer 3 devices and that almost none of them have their own primary firewall devices. However, to have an accurate comparison between Vendor responses, County strongly encourages Vendor to provide these items and prices.
 - If Vendor does not provide an item and price. Vendor **MUST** explicitly list the item in the unit list with "**NOT SUPPLIED**" in bold in the price column, so County can attempt to compensate for Vendor's inability in that area.
 - Thoroughness on this item is evidence that Vendor both understands County's project and is a conscientious company with detail oriented, focused, competent staff. This is important.
- Solution should be able to accomplish the numbers listed above as designed and priced.
 - Individual unit model, specs, and pricing is to be included.
 - Discussion of feature set is to be included



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- All necessary OAM&P, EMS, and other software and licensing is to be included, as well as duration of licensing and renewals (both price and duration).
- Price is to address all elements of the RFP such as the required Design, Implementation, Testing, Training and Support. This is to include (but not limited to)
 - All relevant warranty information
 - All training options with full details of price, format and duration of training
 - All support options with full details of price (initial and renewal)
- Tasks & Responsibilities
 - Unless explicitly stated otherwise in the provided area above, Vendor agrees to accommodate and accomplish all tasks and elements of The Project as per the [Task & Responsibilities](#) section of this RFP.
 - Vendor will provide answers to all questions of the Tasks section of this RFP. A small sample of such questions are:
 - Vendor shall explicitly state in their Proposal the recommended environmental conditions for normal operation of their equipment.
 - Vendor shall state any specific requirements or options for advanced services such as Carrier Ethernet 2.0 features, interoperability with other management systems, and interfaces to non-standard transport equipment that may be of interest to the County and that can be optimized by Vendor.
- Strengths and Weaknesses
 - Vendor will provide a list and discussion of any and all strengths and weaknesses of the solution.
 - Are there current or future anticipated service, protocol, upgrade path, EOL, challenges?
 - What will trigger major upgrade expenses such as the requirement for an entire new chassis, or the need for a major new component?
 - ONTs - What would trigger the need to replace ONTs? How interoperable are the ONTs from GPON to AE to NG-PON2?
 - How difficult and what is involved in the upgrade path to NG-PON2?
- Provide a brief narrative as to what the solution does and doesn't accomplish and why Vendor thinks it is a good fit.
- A **SINGLE** "best-fit" solution should be provided with a **SINGLE** final price as a turn-key solution.
 - Alternate options should be listed after the best-fit with price variance to the above single "best-fit" price. The following alternate options **MUST** be provided in addition to any others Vendor chooses to supply:
 - The upgrade path should all non-CAI customers double in quantity.
 - The upgrade path to convert 50% of the 1 Gbps GPON customers to NG-PON2 in 2016.
 -



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Pricing

We understand pricing is a mix of equipment, services, maintenance, and other items. Please summarize your total pricing for each of these categories for your proposed solution. Please make it clear if pricing is one time or recurring.

Remote Sites

County would like to investigate methods by which the number of future remote sites might be connected, either with extended-range GPON or with active optical Ethernet at least to selected subscribers.

Please provide Vendor options and pricing.

Why Choose Vendor?

Why should County choose Vendor for the FTTx Electronics solution to The Project over Vendor's competitors?

Vendor Concerns

What are Vendor's largest concerns regarding Vendor's ability to satisfy County's needs in providing a solution to The Project?

Work Timeline

After reading the [Timeline](#) section, please comment. Is Vendor ready to begin work immediately after going to contract? What thoughts or concerns does Vendor have with this timeline?

Liquidated Damages Clause

County's timeline for this project is very tight and also holds critical impacts to other County projects, goals, and community safety. This is particularly true of the December to March abandonment of the County courthouse during which the building will be gutted and remodeled and all 911 and dispatch services will be impacted for the entire county. For this reason, and as evidence that Vendor is comfortable standing behind its solution, County prefers a Vendor willing to accept the Liquidated Damages Clause of this RFP as part of the arrangement. This is not necessary, but preferred.

Please list Vendor's ability and willingness to be bound by this clause, and/or offer an alternative.

Time Extensions

Time extensions will not be given to this RFP's Deadline. Please do not ask.

Understood?



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Electronic Version

Post Proposal Opening, County will require the RFP Response and all attachments be made available in electronic format, to be in either Microsoft Word or Google Docs format. Other formats, such as PDF will **not** be acceptable as they do not facilitate copy/paste into a Google Table for easy side-by-side comparison.

Will comply?

WCITC And Network Operator Review

Note, by submitting a Proposal, Vendor authorizes County to provide Proposal to the Network Operator and the WCITC group including sections marked confidential and to discuss any and all aspects of RFP Proposal Form with Network Operator and WCITC group.

Understood?

Tour

Please provide tour contact information for up to five but at least three (3) similar projects or work appropriate for County to visit. Note, supplying this information will be construed as providing the County with permission to contact the client.

Vendor should endeavor to suggest tour sites that are a balance of proximity to each other, proximity to County, and as similar an environment to County as can be reasonably achieved, so County's tour can be succinct and relevant.

Client #1:	Company: Name: Title: eMail: Phone: Brief Description of Client.	
Client #2:	Company: Name: Title: eMail: Phone:	



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	Brief Description of Client.	
Client #3:	Company: Name: Title: eMail: Phone: Brief Description of Client.	
Client #4: (Optional)	Company: Name: Title: eMail: Phone: Brief Description of Client.	
Client #5: (Optional)	Company: Name: Title: eMail: Phone: Brief Description of Client.	

Post RFP Release - Additional Information

Vendor understands that clarifications throughout the RFP process are allowed and is the responsibility of Vendor to track these regularly by opening the RFP at https://docs.google.com/document/d/1W2GOtm0R7Y6Rcbt6RY-Ni_ev1NAvMKI6mWL3s_5SRU and examining the "Post RFP Release - Additoinal Information" section found at the very end of the RFP.

Understood?



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Post RFP Release - Additional Information

As per the [County's Reservations](#) section of this RFP, clarifications throughout the RFP process are allowed and is the responsibility of Vendor to track. They are listed below:

Clarifications and Additional Information list here:

- Question: What are the addresses for the two Co-Lo buildings?
 - Answer: mCo-Lo will be at 555 Main Street, Meeker CO 81641 in the county courthouse.
 - Answer: rCo-Lo will be at 255 Main Street, Rangely CO 81648.
- Question: IPv4 or IPv6 design required – does the customer have enough IPv4 addresses
 - Answer: County prefers an IPv4 design with an upgrade path to IPv6. County's Network Operator is currently talking address space with the bandwidth provider.
- Question: Site survey – when can sites be visited to provide site survey information for installation
 - Answer: Anytime - call 970.878.9545 for appointment.
- Question: What are sources of funding for project
 - Answer: County internal budget and DOLA (Department of Local Affairs).
- Question: What is the intended placement of splitter/ONT/OLT units vs. customer bypass at each pedestal (OSP layout)
 - Answer: All is to be home-run, so splitter/OLT in Co-Lo (Data Centers) and ONT to be inside units at customer premises.
- Question: Power requirement for the equipment: What power source is available at each site? Commercial AC? -48Vdc ? 24Vdc ?
 - Answer: mCo-Lo will have AC, 48Vdc or 24Vdc. rCo-Lo will have AC and Vendor to supply AC to DC power solution.
- Question: If powered with Commercial AC, battery backup required? How long?
 - Answer: mCo-Lo - County will supply battery backup.
 - Answer: rCo-Lo - Vendor will supply UPS solution for 2 hours minimum.
 - Answer: Customer Premises - Vendor to have an 8hr UPS solution and an optional 24hr UPS solution as per FCC.
- Question: What are the environments of each site for the equipment? OSP ? Temp controlled indoor?
 - Answer: Both sides are temp controlled indoor.

Updates

- mCo-Lo Only (not true for rCo-Lo)
 - County will supply a 12 or 24 volt DC power feed in the data center.
 - County will supply UPS system.
- Spec Sheets on the Fiber for the in town (Meeker and Rangely) fiber. **NOT for mrLink nor FTTT fiber!**
 - [Fiber Spec Sheet.PDF](#) - Fiber Type C
 - Part Numbers are:



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- AT-3CE453T-012
- AT-3CE453T-024
- AT-3CE453T-048
- AT-3CE453T-072
- AT-3CE453T-096
- AT-3CE453T-144
- AT-3CE453T-288