

East Central Colorado BOCES WAN Consortium Request for Proposal



For E-rate eligible Lit Services, Dark Fiber /IRU Services, and Self-Construction options to deliver Infrastructure Development, Service Aggregation, Management and Operating Network Services

**Release date: January 25, 2019
All Responses are Due March 5, 2019**

---For details see Response Due Date Section---

Background

The East Central Colorado WAN Consortium is inviting proposals for affordable, reliable, and abundant broadband connectivity options and services for the East Central BOCES and its member districts. The need for both transport and internet access in the districts that comprise East Central BOCES is increasing every year and students living in these rural areas deserve competitive options comparable to those available to more well served geographies.

Abstract

The East Central BOCES project is seeking replacement telecommunications services; including services such as Wide Area Network Transport, Equipment, and Management & Operations. The ECBOCES and its member districts find value and cost saving efficiencies when aggregating resources both within the ECBOCES and with other BOCES. This RFP seeks comparative solutions including lit transport services, dark fiber purchase / IRU, self-construction of new infrastructure, category 1 equipment for a self provisioned network, and maintenance and operations for a self provisioned network. The ECBOCES will also entertain proposals that include hybrid approaches to deliver the most cost effective, reliable and sustainable connectivity possible.

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Introduction

As approved by the Federal Communications Commission in E-rate modernization order 2 (WC Docket No.13-184)(<https://www.fcc.gov/document/fcc-releases-order-modernizing-e-rate-21st-century-connectivity>). The ECBOCES Districts wish to compare Lit Services, Dark Fiber or IRU Services and Self-Construction Options for the listed school districts in their region (see Appendix A). These schools are following the new State Education Technology Directors Association (SETDA) recommendations for bandwidth (www.setda.org Broadband Imperative II) and require a substantial upgrade from their current level of service. The ECBOCES is continuing work with Education Superhighway and is using their calculations to inform current and future pricing guidelines. All services sought under this procurement are requested to begin concurrently with the East Central BOCES' new fiscal year beginning July 1st unless specifically noted otherwise.

ECBOCES member Districts have experienced significant bandwidth demand increases in the last 5 years. Projections in the SETDA report indicate that bandwidth demands will continue to grow at a rate of 65% per year or more. The East Central BOCES' member district's future plans include use of latency sensitive applications, mandated student assessments, and significant peaks in daily bandwidth demand. Due to these applications, services featuring throttled connections or operating on a contended network for these locations has been determined to be unacceptable.

Scope of Service Section Descriptions

This RFP document contains the following Scopes of Services:

1. Lit Services

- a. Describes a WAN service comprised of provider or vendor circuits and equipment which is fully owned and operated by the vendor or a vendor partner.
2. Dark Fiber Lease or IRU
 - a. Describes a WAN infrastructure over an existing set of fiber pathways that will be provided to the ECBOCES by either their outright sale or an Indefeasible Right of Use for fiber connecting the sites described in this RFP
3. Self Construction of Fiber
 - a. Describes a WAN infrastructure deployment that will install new fiber connectivity to the sites Described in this RFP. Under this scope, the vendor will provide a specified number of fiber strands which will be owned by the East Central BOCES

Note: The above three scopes describe services which fulfil the same purpose. The East Central BOCES reserves the right to make multiple awards, or no award at all. No site will be serviced by more than one of above transport scope types.

4. Category 1 Equipment for Self Provisioning
 - a. If responding to scope 2 or 3, vendors are encouraged to either provide or identify a partner to provide a bid for this scope. Scope 4 describes e-rate category 1 eligible network equipment required to make use of a self provisioned network. A vendor can choose to respond to only this scope.
5. WAN Maintenance & Operations
 - a. If responding to scope 2 or 3, vendors are encouraged to either provide or identify a partner to provide a bid for this scope. Scope 5 describes a network maintenance and operations service. The successful vendor will operate all aspects of the East Central BOCES WAN service at the direction of the East Central BOCES or its assigned agent. A vendor can choose to respond to only this scope.

Scope of Services - Lit Services

The East Central BOCES, is seeking options for a private dedicated network solution for the connections between the district aggregation point and an ECBOCES hub (Appendix A for sites) location where all fiber and routing equipment is dedicated to the ECBOCES network. Any newly proposed fiber and routing equipment supported by this procurement must be exclusive for the use of the ECBOCES Districts (vendor may propose a different option but must identify it as not exclusive and may require Cost Allocation). The proposed solution options should provide highly availability, high bandwidth services that support data, voice, and video traffic. Any shared circuits or oversubscriptions should be clearly labeled and listed as an optional response.

The ECBOCES Districts are seeking creative and forward thinking options for bids. Proposals that can address the value and cost saving efficiencies sought in this RFP while combining this procurement with other school districts or community anchor institutions across the state will be considered and will be looked upon favorable.

Respondents should bid transport and internet separately and can also bid a combination of services as an option. Internet services are not specifically sought in this RFP as it is specific to WAN transport services. If a bidder's service offering is inclusive of internet access the vendor is instructed to clearly state that in their response and to separate out its cost if possible. Vendors are encouraged to offer collaborative partnerships and options not specifically contemplated in the RFP which could be beneficial to the ECBOCES, its member districts, and the communities they serve. The ECBOCES and their

member districts will seek e-rate funding for this procurement therefore all responses must be e-rate compliant.

Lit Services are to be considered a fully managed service, consisting of transport and optional pricing for bundled basic firewall services to the locations listed in Appendix A. Providers are instructed to bid transport and ISP services for these lit service circuits separately if possible, however the provider may additionally propose pricing for bundled transport and ISP services if they choose to do so.

Note: All respondents must be E-rate eligible service providers and have a SPIN.

The ECBOCES Districts must have guaranteed bandwidth to these end points with throughput (upload and download) being symmetrical and with Service Level Agreement (SLA) guarantees.

The attached pricing table (Appendix C) asks for pricing of lit services for 1.) Transport circuits and 2.) Optional internet access (with an option to also bid as a bundled service) at the 300 Mbps, 500 Mbps, 1 Gbps, and 10 Gbps levels. Contract terms shall conform to a 36 month contract with two 12 month extensions, and a 12 month contract with month to month extensions. All voluntary extensions shall be available at the ECBOCES' sole discretion. The transport circuits shall attach each endpoint in Appendix A to an ECBOCES hub site (or vendor proposed hub site) and if applicable, from the ECBOCES Central Office hub (or vendor proposed hub site) to the nearest, most cost effective Internet Access Point. The ECBOCES Central Office Hub is proposed as a sample aggregation point, the vendor may propose an interconnect and design that is more cost effective and efficient.

The CDOT fiber pair that the ECBOCES has usage right on may be utilized as part of the backhaul for a vendor's Lit Services bid. If the vendor's bid for Lit Services will make use of the CDOT fiber the bid must meet three requirements:

1. The use must be clearly identified in the bid
2. The vendor must indicate if they have access to an existing last mile connection between the CDOT handholes and the district drop off point, or if the vendor intends to construct new fiber between these locations
3. In order to meet the required needs of all attached districts, the vendor must be prepared to provide lighting electronics to attach to the CDOT fiber which can accommodate more than 1 Gbps of aggregated district traffic. Although individual sites may be receiving 1 Gbps of WAN connectivity, the use of the shared CDOT backbone could become contested if lit at 1 Gbps. The ECBOCES proposes the following mechanism for identifying upgrades to vendor lit CDOT backbone: Using an industry standard 5 minute measurement interval, the vendor will upgrade its equipment at such a time when any one hour's 95th percentile traffic exceeds 50% of the link's capacity. The vendor agrees to upgrade the equipment lighting this link to an industry standard of their choosing, which also meets the utilization guideline set forth in this item.

Prices should be all inclusive. All inclusive in this case means including all **non-recurring costs (NRC)** required by the vendor to commence service and all **monthly recurring costs (MRC)** should be included in the requisite columns of the pricing sheets. No increased pricing will be accepted during the term of any contract pursuant to this RFP which is beyond the quoted NRC and MRC rates submitted by the vendor. Non-Recurring Costs should be separated from Monthly Recurring Costs in the quoted rates for Lit Services. The E-rate program allows ECBOCES Districts to request installment based payments of the non-discounted portion of the NRCs. The ECBOCES Districts request to pay the non-discount share of special construction costs in equal annual installments over three years from Funding Year 2019 to Funding Year 2021 inclusive.

All lit service circuits must support a Quality of Service (QoS) mechanism and have the ability to apply rate limiting guarantees to specific packet types to ensure Quality of Service for specific traffic over each link. The network must have the ability to support multiple QoS policies and prioritization queues across

each link to reduce latency and packet loss for data, voice, and video traffic as identified by the ECBOCES.

For all equipment which is installed by the vendor for the dedicated use of the ECBOCES WAN service, the vendor agrees to provide ECBOCES with SNMP read access to the equipment, or an equivalent telemetry interface agreeable to both the vendor and ECBOCES.

The East Central BOCES will consider bids which contain wireless point to point services with the following constraints. 1) All wireless connections must meet the throughput requirements for the site served. 2) All wireless connections must meet the same Service Level Agreement metrics as described in this RFP document in Proposal Instructions for Respondents. This includes availability, throughput, and bit error rates. 3) No wireless link may be more than two wireless “hops” away from a fiber backhaul location.

Scope of Services - Dark Fiber Lease or IRU

The ECBOCES is seeking options for a private dedicated dark fiber/IRU network solution for the connections between the district site and the ECBOCES central office hub, a vendor designated aggregation point (See Appendix A for specific sites and network diagram of existing WAN), or the ECBOCES CDOT backbone. All new fiber and routing equipment provided under this RFP service type is to be 100% dedicated to the ECBOCES network. Any proposed fiber and routing equipment must be exclusive to the ECBOCES Districts. Vendor may propose a different option but must identify where equipment usage is not exclusive.

The ECBOCES Districts are seeking creative and forward thinking options for bids. Proposals that are considering the value and cost saving efficiencies of combining this RFP with other school districts across the state will be considered and will be looked upon favorably.

The vendor is requested to provide a 2 or 4 strand lease of fiber between the designated ECBOCES Districts locations (Appendix A) and a hub, carrier neutral hotel, or the ECBOCES CDOT fiber backbone. The cable plant design shall provide equivalent access as described in the current WAN design diagram (Appendix G), however the East Central BOCES will entertain vendor proposed solutions that utilize either this design or proposes an alternative more cost effective and performant solution. A diagram showing the endpoints of each fiber run must be included with the IRU response (Appendix A). The pricing response should indicate which endpoints are served with which lateral.

Dark Fiber/IRU Maintenance

Operations and Maintenance Practices: The ECBOCES District will require ongoing maintenance and operations of the fiber for at minimum the entire term of the dark fiber lease. When pricing maintenance and operations, the respondent should include an overview of fiber maintenance practices including:

- Equipment costs for lighting the dark fiber (may be listed separately in the pricing or as a Category 1 Equipment bid)
- Routine maintenance and inspection including fiber location requests
- Scheduled maintenance windows & scheduling practices for planned outages
- Fiber monitoring including information on what fiber management software is used what fiber monitoring system is used, and who performs the monitoring
- Handling of unscheduled outages and customer problem reports

Dark Fiber/IRU Price Proposal

The ECBOCES Districts are interested primarily in 2 or 4 strand fiber or multiplexed wave leases for a term of 120 (or 240 months) for each location to be connected with a one-time capital cost payment

and/or an alternative payment structure for the lease of fiber. Additionally the proposal shall include “all-in” recurring payments for operations and maintenance costs. The proposal shall be set for a term of 10 years of utilization with an option to renew for two 10 year extensions renewable at the ECBOCES’ discretion.

The ECBOCES Districts will be unable to evaluate proposals that do not include at least one alternative for an up-front capital payment for the IRU combined with separately identified recurring maintenance payments.

Each respondent is required to complete the pricing matrix in the spreadsheet accompanying (Appendix C) this RFP. Equipment costs for lighting the fiber should be included either separately as Category 1 Equipment, as part of this scope, or as part of maintenance and operations costs.

For each proposed option respondent must offer pricing proposals for a lease of 2 or 4 fiber strands or multiplexed waves for the 120 month (or 240 month) terms.

General Terms for Leased Fiber

Open Fiber Interconnection Policy

The ECBOCES Districts prefer that the vendor support “vendor neutral” or “open interconnection cross connect” requests within their facilities. It is possible that after the initial build, The ECBOCES Districts will require additional cross connects to the ECBOCES Districts Owned Fiber, to other regional education networks and/or to alternate carriers. Respondents must describe any cross-connect policies and all related cross-connect fees. The ECBOCES Districts prefers vendors that build cross-connect costs into the initial purchase arrangement.

Colocation Space Availability

The ECBOCES Districts may consider leased rack or caged space at the colocation facility to house electronics for traffic that will go upstream from the ECBOCES Districts WAN. Respondents are encouraged to provide detailed information on access and cross-connect policies and arrangements for power and telephone service at colocation address.

Meet-me Hole and Mid-Span Interconnection Splicing

It is possible that the ECBOCES Districts may want to interconnect with the leased facilities at meet-me manholes or mid-span splice locations. Respondents should detail policies and guidelines that document meet-me manhole and mid-span interconnection procedures along with detailed costs for these activities.

Dark Fiber Performance

The ECBOCES Districts prefers to lease dark fiber (or dedicated waves on division multiplexed fiber) routes that contain a homogenous fiber type throughout the segment. It is currently anticipated that fiber utilized for the ECBOCES Districts will be G.652.D fiber or a type of equivalent performance. Vendors should provide information on the age, type and performance of fiber they are proposing to lease, including a description of all applicable splice loss budgets. Additionally, vendors should identify any regeneration facilities on the fiber path and provide information on their capability and capacity. If a regen facility cannot carry 10 Gbps links, this **must** be clearly indicated and costs which will be the responsibility of the ECBOCES for upgrading the facilities must be included in the respondent’s pricing sheet.

Note: All respondents must be E-rate eligible service providers and have a SPIN.

Scope of Services - Self Construction of Fiber

The ECBOCES is seeking options for a newly installed private dedicated network solution for the connections between 1.) the district aggregation points and the CDOT fiber backbone 2.) a backbone site (or alternative vendor designated hub) where all fiber and routing equipment is 100% dedicated to the ECBOCES network. Any proposed fiber and routing equipment must be exclusive to the ECBOCES Districts. Vendors may propose a different option but must identify instances where equipment or facilities are not exclusive. The solution options should support high availability, high bandwidth services that support data, voice, and video simultaneously.

The ECBOCES Districts are seeking creative and forward thinking options for bids. The ECBOCES and their school districts will seek e-rate funding therefore responses must be e-rate compliant. All proposals must be fully e-ratable with non e-ratable items clearly identified. All respondents must have a SPIN and be e-rate eligible service providers.

Self Construction Pricing

ECBOCES requests that respondents propose pricing for all or part of the current WAN design (Appendix G) as new build of fiber from the designated endpoints (Appendix A) using the current design or propose changes that may be more cost effective than the current infrastructure design. Twelve 12 strands (6 pair) of new build fiber are requested. ECBOCES District's specifications for a new fiber build are contained in the attached Self Construction Timeline and Guidelines.

Respondents are encouraged to separate special construction charges as defined by E-rate Modernization Order 2. New fiber special construction charges as defined by the order include construction, design, engineering and project management. The ECBOCES requests that the respondents consider allowing ECBOCES to pay the non-discount share (share of special construction costs that are the responsibility of the applicant, to be paid in equal annual installments over the four years from Funding Year 2019 to Funding Year 2022 inclusive.

Respondents should take note that E-rate Modernization order allows fiber construction vendors to install additional strands, beyond the 12 strands required by ECBOCES districts. On approved projects that meet the E-rate specifications for competitive bid and cost effectiveness, E-rate will pay special construction charges, defined in E-rate modernization order 2 as construction, design, engineering and project management fees including the first 12 strands of fiber. The successful respondent will pay for the incremental cost of additional fibers to the premise of the eligible applicant and then 100% of all construction charges to ineligible applicants.

Each respondent is required to complete the pricing matrix (Appendix C) accompanying this RFP (3 worksheets in the spreadsheet). The ECBOCES will evaluate and select the best payment option for their district.

General Terms for Self-Construction

Open Fiber Interconnection Policy

The ECBOCES Districts prefer that the vendor support "vendor neutral" or "open cross connect" requests within their facilities. It is possible that after the initial build, The ECBOCES Districts will require additional cross connects to the ECBOCES Districts Owned Fiber, to other regional education networks, and/or to alternate carriers. Respondents must describe any cross-connect policies and all related cross-connect fees applicable to the new construction design. The ECBOCES Districts prefers vendors that build cross-connect costs into the initial purchase arrangement.

Colocation Space Availability

The ECBOCES Districts may elect to lease rack or cage space at a colocation facility to house electronics for traffic that will be placed upstream from the ECBOCES Districts WAN. Respondents should provide detailed information on access and cross-connect policies and arrangements for power and telephone service at colocation address.

Meet-me Hole and Mid-Span Interconnection Splicing

It is possible that the ECBOCES Districts may want to interconnect with the leased facilities at meet-me manholes or mid-span splice locations. Respondents should detail policies and guidelines that document meet-me manhole and mid-span interconnection procedures along with detailed costs for these activities.

Dark Fiber Performance

The ECBOCES Districts prefers to lease dark fiber routes that contain a homogenous fiber type throughout the segment. It is currently anticipated that fiber utilized for the ECBOCES Owned Fiber will be G.652D fiber or of a longer reach standard. Vendors should provide information on the age, type and performance of fiber they are proposing to install, including a description of all applicable splice loss budgets.

Fiber Maintenance

Operations and Maintenance Practices: The ECBOCES District will require ongoing maintenance and operations of its newly installed fiber plan under this RFP. Identify pricing for ongoing fiber maintenance. When pricing maintenance and operations, the respondent should include an overview of fiber maintenance practices including:

- Equipment to lite the fiber may be priced as part of the maintenance and operations or as part of the dark fiber lease; equipment must be broken out and listed separately
- Routine maintenance and inspection including location costs
- Scheduled maintenance windows & scheduling practices for planned outages
- Fiber monitoring including information on what fiber management software is used what fiber monitoring system is used, and who performs the monitoring
- Handling of unscheduled outages and customer problem reports

Prices should be all inclusive. All inclusive in this case means including all **non-recurring costs (NRC)** required by the vendor to commence service and all **monthly recurring costs (MRC)** should be included in the requisite columns of the pricing sheets. No increased pricing will be accepted during the term of any contract pursuant to this RFP which is beyond the quoted NRC and MRC rates submitted by the vendor. Non-Recurring Costs should be separated from Monthly Recurring Costs in the quoted rates. The E-rate program allows ECBOCES Districts to request installment based payments of the non-discounted portion of the NRCs. The ECBOCES Districts request to pay the non-discount share of special construction costs in equal annual installments over four years from Funding Year 2019 to Funding Year 2022 inclusive.

Scope of Services - Category 1 Equipment for Self Provisioning

The ECBOCES is seeking bids for Category 1 equipment necessary to make a Self Provisioned Wide Area Network service functional. This equipment shall only be awarded if the ECBOCES awards contracts under this RFP for Dark Fiber/IRU or Self Construction of new Fiber scopes. Requirements for this equipment are set forth below:

- A. Network routing equipment capable of OSI Layer 3 routing. e.g. Router or Layer 3 switch.
- B. Equipment must be capable of one or more dynamic interior routing protocols, such as:

- a. OSPF
 - b. IS-IS
 - c. EIGRP
 - d. iBGP
- C. All interfaces shall be capable of acting as routed interfaces.
 - D. Equipment shall provide a minimum of 8 copper 1000Base-T IEEE 802.3ab ports.
 - E. Equipment shall provide a minimum of 4 SFP ports capable of supporting 1310nm or 1550nm fiber optic SFPs operating at the 1000Base-X standard, or an equivalent standard capable of transmitting at a symmetric 1000 Mbps over single mode fiber.
 - a. Sites listed in Appendix A will require a minimum of 2 SFP 1000Base-X modules capable of 10km transmission with the following exceptions
 - i. Bennett, ECBOCES Office, Flagler, and Burlington are expected to require a total of 4 SFP interfaces and optics
 - ii. Hi-Plains(Seibert), Cope Distribution (if design requires), Arickaree, Liberty, and Idalia may require long distance optics. i.e. 1000BASE-ZX or a similar reach standard.
 - b. All newly proposed equipment must have the capability to accept an equal quantity of SFP+ interfaces as described above which can support a minimum of 10Gbps transmission speeds.
 - F. Pricing for this equipment should be placed in an Appendix C spreadsheet under the “Category 1 Equipment” tab.

Scope of Services - WAN Maintenance & Operations

The ECBOCES is seeking bids for the maintenance and operations of a self provisioned WAN service is described within this RFP. This scope of services section will only be awarded if the ECBOCES elects to award bids pursuant to the Dark Fiber/IRU or Self Construction service scopes within this RFP document. Pursuant to awards under the Dark Fiber/IRU or Self Construction scopes the ECBOCES may be self provisioning WAN services and will require a maintenance and operations contractor to operate the infrastructure.

The successful vendor shall provide services for maintaining and operating a WAN service as depicted in Appendix H, or a new network design which is the result of an offer to this RFP also being proposed by a vendor or a vendor partner.

Proposal Instructions for Respondents **please include the following information in your response:**

Simple, brief and direct proposals are encouraged.

Recommend a 12 pt font and 1 inch margins.

Refer to Appendix A for all site location information.

All proposals are to be submitted electronically—Refer to Proposal Submission below for information

- A. Complete Appendix B and use it as the Cover Sheet for the Proposal. Signed by an Officer of the Company or someone authorized by the company to make binding offers.
- B. Proposal narrative describing the services and design—not to exceed 5 pages.
- C. Complete Appendix C for pricing for each option being proposed. If proposing multiple options for the same scope, provide pricing information in separate Attachment C documents.

The "Hub Location" columns in Appendix C refers to the termination point where the transport service for that site will be offloaded to the backbone. i.e. Dark Fiber or New construction bids for sites in the "CDOT Fiber Lateral Group" may have a Hub Location of the nearest CDOT manhole (Appendix F). Where as sites from one of the "Transport Service Groups" may have a hub location of the vendor's choosing.

The pricing response sheets in Appendix A will be utilized to determine consortium wide pricing for this project. However, each district requesting services belongs to one or more "service groups". The ECBOCES encourages vendors to bid as many service groups as they are able to serve and prefers to receive bids that serve at least one service group as a whole, however, bids for single items or sites will be considered. The ECBOCES reserves the right to make multiple awards, if the exclusion of some service groups would cause the remaining average price per site to change, the vendor will duplicate the relevant pricing tab in the submitted Appendix C to clearly illustrate how the exclusion of specific service groups would affect pricing. If no duplicated pricing sheets are included in the submitted Appendix C workbook, the vendor commits to honor the pricing for the service group(s) they are bidding for, regardless of the consortium's decision for the award of the remaining service groups. Pricing is requested for the following products or services, with restrictions as described below.

- a. Fully Managed Lit WAN Services for all sites in Appendix A - If proposing this option respondent must provide options for independent pricing for the service groups as identified in Appendix A
- b. Dark Fiber IRU or Purchase for all sites in Appendix A - If proposing this option respondent must provide options for independent pricing for the service groups as identified in Appendix A
- c. Self Construction for all sites in Appendix A - If proposing this option respondent must provide options for independent pricing for the service groups as identified in Appendix A
- d. Fully Managed Lit WAN Service for some sites - ECBOCES Prefers that any partial site bids are provided for a minimum of one or more complete service groups as identified in Appendix A
- e. Dark Fiber IRU or Purchase for some sites - ECBOCES Prefers that any partial site bids are provided for a minimum of one or more complete service groups as identified in Appendix A
- f. Self Construction for some sites - ECBOCES Prefers that any partial site bids are provided for a minimum of one or more complete service groups as identified in Appendix A
- g. Network Management and operation for Wide Area Network described in this RFP. Please include bids utilizing vendor owned equipment as well as consortium owned equipment.

- h. Category 1 Equipment for self provisioning of Wide Area Network described in this RFP. Please see section “Scope of Services - Category 1 Equipment for Self Provisioning” earlier in this RFP document for equipment requirements. The pricing for this equipment should be placed in the Appendix C spreadsheet under the appropriate tab.
- D. As part of its response a network diagram displaying the paths to be used to serve each endpoint must be included (Appendix D).
- E. Technical Information to be included:
- a. Describe a web portal or local monitoring for all circuits
 - b. Provide response time history and process for dealing with outages
 - c. Desired 99.99% guaranteed uptime—Describe the process and history of uptime
 - d. Rate limiting or throttle the capacity of the circuit at any time is not desired. Please describe
 - e. Symmetrical upstream and downstream bandwidth to the required levels Please describe
 - f. Oversubscription and shared services are less desirable, and must be fully described in the proposal
 - g. Network Latency Commitment <20 milliseconds roundtrip. Describe how this will be achieved.
 - h. Network Jitter Commitment <5 milliseconds. Describe how this will be achieved.
 - i. Bit-Error Rate commitment <0.25% between circuit endpoints. Describe how this will be achieved.
 - j. Mean Time-To-Repair for outages <4 hours. Describe how this will be achieved.
 - k. Describe number of fibers for districts and additional fibers for others if applicable
 - l. Include Implementation plan to light dark fiber including all equipment and any additional lit circuits or fiber builds that will be needed to complete connections.
 - m. Maintenance and Operations of the network is critical to the WAN service’s reliability include information on processes and procedures.
- F. Provide information on basic firewall services, ip addressing and as optional bundled services
- G. Provide information on optional internet filtering services and technical details for implementing
- H. Refer to Company Background and Vendor Information below and include in the proposal.
- I. Provide 3 references from current customers in the bid (Appendix E).

General Items - By submitting a proposal vendor acknowledges and agrees to the following terms

1.) Growth

Each district will also need broadband capacity to support normal data transmission with capacity to grow into a 1:1 learning environment which has requirements for higher quantity and quality of on connectivity. The East Central BOCES consortium's Internet bandwidth utilization growth in the next three years is estimated at 30% per year. Proposals should be able to grow to meet these needs.

- 2.) **Value added services** Respondents must disclose any additional costs as well as equipment specifications for USAC reporting purposes. Additionally, we are seeking responses for the inclusion of optional bundled services for Basic Firewall Protection (UTM), CIPA compliant content filtering, or other LAN management services.

Note: Firewall protection may not be provided by a vendor other than the Internet access provider and may not be priced out separately

http://www.usac.org/res/documents/sl/pdf/ESL_archive/EligibleServicesList-2014.pdf

3.) **Partnerships and Collaboration with other Community Anchor Institutions**

The ECBOCES seeks Public/Private Partnerships to reduce costs, share maintenance and operations, and provide additional connectivity within the communities we serve. Proposals which result expanded and lower cost access for surrounding communities will be favorably considered as part of this procurement. Additional partnerships such as healthcare connectivity are being explored and will allow our schools to work with local and regional hospitals, behavioral health care, and public libraries. New partnerships are needed to expand the school to home connection as lack of home based connectivity for students it is a growing concern and reflects the greater broadband needs of the residential housing community and the fundamental inequity issues created by the homework gap.

4.) **Reliability and Load Balancing**

It is desirable for 2 or more connections for each location to ensure reliability, load balancing, and uninterrupted service to each location for the safety and security of students and staff. Please describe how this could be achieved.

- 5.) **Hybrid Response**—A Combination of Lit, Leased, or Self Construction options for individual locations may be included as a response. Bidders are instructed to clearly identify any and all hybrid purchasing proposals or options contained in their bid package.

- 6.) **Lowest Price** The FCC's Lowest Corresponding Price Rule and reasonable cost as according to Education SuperHighway will all be factors in evaluating proposals.

10) **Data Privacy and Data Security**

Vendors shall include a proposed Data Privacy Addendum to their service contract as required by the CRS 22-16-101

11.) **Contract Term**

Contracts for Dark Fiber/IRU or Self Construction will be for no less than 120 months and could be 240 months. Lit services contract(s) should be termed for 36 months with two 12 month voluntary extensions and for a 12 month contract with month to month extensions. Extensions shall be exercised at the sole discretion of the ECBOCES. Any contract(s) may be terminated by either party with a 60 day notice. The ECBOCES reserves the right to make single or multiple contract awards.

Districts may opt to contract separately or as consortiums for services. Additional districts may opt to join in years 2 and three by contracting separately. Please describe how you would accommodate this.

Please note: Any individual school has the right to use this contract or seek a contract on their own based on individual needs. The district reserves the right to sign a consortium contract or an individual contract in whole or for partial services. For example, a district may choose to contract here for WAN transport and with another bid for internet access.

A Colorado Constitutional Amendment prohibits public schools and libraries from entering into multiple year financial obligations, such as multi-year contracts, without pre-allocation of the funds unless the local voters have previously approved such an obligation. [Colo. Const. Article X, Section 20 (4) (6)] However, funding agreements, including multi-year contracts that are subject to annual appropriations by a governing boards such as a school, generally are allowed and are not subject to this constitutional provision since the governing board decides each year to appropriate the expenditure.

12.) Implementation Dates

This RFP calls for implementation of services that must be installed, tested, and fully operable no later than July, 1 2019. Logistics of a completed build-out may be negotiable if clearly defined in bid documentation. Contracting must be e-rate compliant and all non-e-ratable expenses must be clearly identified and presented in a separate budget. Any multi-year contracting proposed must retain e-rate eligibility to be considered.

13.) Company Background, Vendor Qualifications and Experience

A vendor's background, qualifications, and experience play an important role in the evaluation of the proposal and to the success of the project overall. The prime contractor is responsible for all work performed. ECBOCES reserves the right to refuse any proposed contractors or subcontractors at its sole discretion. Describe your organization's qualifications and related experience that demonstrate both financial stability and the capability to sustain the contracted service. Provide a description of the service provider and an organizational history, including:

- Years in Business
- Location of Offices
- Form of Business (cooperative, corporations, partnership, joint venture, LLC, etc.)
- Size (number of employees, and non proprietary annual financial summaries)
- Current Customer Base

14.) Schedule of Activities

RFP Released	January 25, 2019
RFP Questions Due	February 1, 2019
RFP Question Answers Posted	February 4, 2019
RFP Proposals Due—Electronic delivered by 4 pm	March 14, 2019
Finalist Announcement	March 15, 2019
Finalist Interviews	March 18, 2019
Best and Final Offers Due	March 22, 2019
Intent to Award Contract(s)	March 25, 2019

15.) Questions

Vendors/contractors may submit questions to address below by the date specified in Section 14 of this document. Questions and all answers will be posted on <http://www.ecboces.org/2019-wan-rfp> for all potential respondents to see. Opportunity will not be given for vendor to clarify questions, ensure that all questions are asked in a clear and thorough manner.

Direct all questions in writing to 2019-WAN-RFP@ecboces.org

16.) Proposal Submission

Proposals may be submitted in written or electronic form. All proposals are due on date and time listed in the Schedule of Activities. No late proposals will be accepted. It is the responsibility of the offeror to ensure that ECBOCES receives the proposal on or before the proposal due date and time. Vendors mailing their proposals shall allow sufficient mail delivery time to ensure receipt of their proposals by the time specified. All submissions must be on site by the time and date listed on the Schedule of Activities. Late submissions will not be opened. The proposal package may be delivered electronically to 2019-WAN-RFP@ecboces.org.

17.) Confidential / Proprietary Information

The ECBOCES Evaluation Committee and the Project Manager consultant will be the only one to review the submitted proposals. The entire proposal document and the proposal pricing information included in it will not be considered confidential or proprietary to the evaluation committee members; provided, however, that proposals are exempt from disclosure under the Colorado Open Records Act as confidential commercial data, until a recommendation for award is made. The RFP review committee may ask additional questions of finalists who will be permitted to provide additional or confidential information in support of their proposals.

18.) Non-Discrimination

The vendor will comply with all applicable state and federal laws, rules and regulations involving non-discrimination on the basis of race, color, religion, national origin, age, sexual orientation or sex.

19.) Independent Contractor Clause

All personal service contracts must contain the following clause : "THE CONTRACTOR SHALL PERFORM ITS DUTIES HEREUNDER AS AN INDEPENDENT CONTRACTOR AND NOT AS AN EMPLOYEE. NEITHER THE CONTRACTOR NOR ANY AGENT OR EMPLOYEE OF THE CONTRACTOR SHALL BE OR SHALL BE DEEMED TO BE AN AGENT OR EMPLOYEE OF EAST CENTRAL BOCES. CONTRACTOR SHALL PAY WHEN DUE ALL REQUIRED EMPLOYMENT TAXES AND INCOME TAX WITHHOLDING, SHALL PROVIDE AND KEEP IN FORCE WORKER'S COMPENSATION (AND SHOW PROOF OF SUCH INSURANCE) AND UNEMPLOYMENT COMPENSATION INSURANCE IN THE AMOUNTS REQUIRED BY LAW, AND SHALL BE SOLELY RESPONSIBLE FOR THE ACTS OF THE CONTRACTOR, ITS EMPLOYEES AND AGENTS."

20.) Indemnification

To the full extent permitted by law, the vendor/contractor shall indemnify, save and hold harmless ECBOCES, its employees and agents, against any and all claims, damages, liability and court awards including cost, expenses, and attorney fees incurred as a result of any act or omission by the vendor/contractor or its employees, agents, subcontractors, or assignees pursuant to the terms of the contract resulting from this RFP.

21.) Governing Laws

The laws of the State of Colorado, USA shall govern the bidding, formation, performance and the legal enforcement of any resulting contract. Venue for any dispute concerning the RFP or resulting contract shall be exclusively in the federal court located in Colorado or the state court located in Lincoln County.

22.) Insurance Requirements

The vendor(s) selected for contract award shall furnish a certificate of liability insurance (and certification of insurance for each of its subcontractors and partners) for an amount of no less than \$1million per occurrence. The vendor shall be responsible for all workers compensation, automotive liability, and personal injury insurances and any claims that may arise from the project. ECBOCES may require a labor and material payment bond and performance bond for construction elements of the project.

23.) Contractual Obligations

Local, State and Federal Compliance Requirements: The successful vendor shall be familiar and comply with all local, state, and federal directives, ordinances, rules, orders, and laws applicable to, and affected by this contract including, but not limited to, Equal Employment Opportunity regulations, Occupational Safety and Health Act and Title II of the Americans with Disabilities Act.

24.) Selection of Proposals

An Evaluation Committee will review proposals and may select a shortlist of respondents (scoring highest on the evaluation) for further evaluation and/ or enter into discussions for best and final proposals before award.

25.) Evaluation Criteria

Pricing is the single most heavily weighted consideration in determining the successful offer in the RFP and should be a driving force for responses to the RFP solutions proposed in accordance with e-rate requirements. Other factors including; but not limited to-- long-term aggregate pricing discounts, ability to address bandwidth growth, ability to add additional districts in subsequent years (if bidding all districts), network design local presence (i.e., point of contact), ability to provide shared filtering and firewall services, ability to connect with other regional networks, community partnerships and opportunities, privacy and security practices, company stability and ability and background, and capability to respond quickly to any service concerns will be part of the evaluation criteria.

26.) Award of Contract

The highest-scoring proposal will be selected for award of the contract. This will be announced as a "Notice of Intent to Award". All vendors will be informed of the award selection. In the event that, the number one selection cannot contract for the required service for any reason, the offer may become available to the offeror of the second ranking proposal or ECBOCES may elect to cancel the RFP.

27.) Vendor Partners and Subcontracting

ECBOCES encourages the participation of small, preferably locally-based companies in the project. All anticipated partnerships and subcontracting arrangements must be identified in the initial proposal. In the event of an award and subsequent contract, any changes to the proposed partnership or subcontracting plan, if applicable will require approval of ECBOCES. Significant changes in partnership or subcontracting arrangements could result in withdrawal of the award.

28.) Availability of Funds

The resulting contract is expected to span more than one appropriation period, therefore, a non-appropriation clause shall be in effect. This clause provides that should a contract be canceled for reasons of non-appropriation of funds, cancellation would take effect on the last day of the appropriation period for which funding was budgeted and appropriated. The date would be June 30th of any year during which the contract is in effect. In the event of cancellation for non-appropriation of funds the ECBOCES will not be obligated to purchase any additional service or items from the contract holder. In the event of non-appropriation of funds the successful vendor will be notified a minimum of sixty (60) days prior to the appropriation period's close.

29.) Right to Cancel

The East Central Colorado BOCES Consortium or a member district reserves the right to cancel or withdraw from this RFP at any time prior to entering a signed agreement. Additionally, portions of this proposal may be eliminated based on participant's needs and remaining contracts.

Summary

This RFP is intended to generate the best ideas for providing the ECBOCES and participating district's-- creating a long term, reliable and cost effective approach to broadband connectivity that has the ability to grow as needed. Creativity and new ideas brought to the table for consideration in this effort are welcome.

Appendix A
Spreadsheet for ECBOCES Districts Locations, E-rate Discounts, Existing and Anticipated Bandwidth

District	2018-19 Bandwidth	Expected 2019-20 Bandwidth	BEN	Comments
Service Group CDOT Fiber Lateral Group				
ECBOCES 820 2nd Street Limon Colorado 80828	1 Gbps	1 or 10 Gbps	142296	
Bennett 610 7th Street Bennett, CO 80102	1 Gbps	1 or 10 Gbps	142131	
Strasburg 56729 East Colorado Avenue Strasburg, CO 80136	1 Gbps	1 or 10 Gbps	142147	
Byers 444 East Front Street Byers, CO 80103	1 Gbps	1 or 10 Gbps	142132	
Deer Trail 350 Second Avenue Deer Trail, CO 80105	1 Gbps	1 or 10 Gbps	142135	
Arriba-Flagler 421 Julian Street Flagler, CO 80815	1 Gbps	1 or 10 Gbps	142287	
Hi-Plains(Seibert) 200 Iowa Ave Seibert, CO 80834	1 Gbps	1 or 10 Gbps	142306	
Stratton 219 Illinois Ave Stratton, CO 80836	1 Gbps	1 or 10 Gbps	142303	
Bethune 145 West 3rd Avenue Bethune, CO 8080	1 Gbps	1 or 10 Gbps	142279	
Burlington 380 Mike Lounge Drive	1 Gbps	1 or 10 Gbps	142280	

Burlington, CO 80807				
Agate 41032 2nd Avenue Agate, CO 80101	N/A	1 or 10 Gbps	142130	School Board will likely opt-out of this RFP, however, existing network re-gens in this facility.
Service Group Transport Group 1				
Limon 874 F Avenue Limon, CO 80828	100 Mbps	500 Mbps	142295	Leased connection. Proposals moving this site to the CDOT Fiber Lateral Group will be considered favorably
Cheyenne Wells 395 North 5th West Cheyenne Wells, CO 80810	100 Mbp	300 Mbps	142284	Leased connection
Kit Carson 102 W. 5th Avenue Kit Carson, CO 8082	100 Mbp	300 Mbps	142293	Leased connection
Service Group Transport Group 2				
Genoa-Hugo 220 W 7th Street Hugo, CO 80821	100 Mbp	300 Mbps	142290	Leased connection
Woodlin 15400 Co Rd L Woodrow, CO 80757	100 Mbp	300 Mbps	142272	Leased connection
Karval 16232 Co Rd 29 Karval, CO 80823	N/A	300 Mbps	142292	Not connected to existing network. Vendor should provide pricing for this service group both with and without Karval
Service Group Dark Fiber Group				
Arickaree 12155 County Road NN Anton, CO 80801	1 Gbps	1 Gbps	142278	Currently a dark fiber leased from Plains Telephone Association
Liberty 9332 Highway 36 Joes, CO 80822	1 Gbps	1 Gbps	220852	Currently a dark fiber leased from Plains Telephone Association
Idalia 26845 County Road 9.2 Idalia, CO 80735	1 Gbps	1 Gbps	226902	Currently a dark fiber leased from Plains Telephone Association

**Appendix B
Respondent Cover Sheet**

Request for Proposal Cover Sheet	
Date	
Proposal title	ECBOCES WAN Services
Proposals will be received until	March 5, 2019
	4:00 p.m., local - Mountain Time
Goods or services to be delivered to or performed at	Various Locations – See Attachment A
For additional information please contact the Project Manager	2019-WAN-RFP@ecboces.org
	719-771-4018
Email Address	2019-WAN-RFP@ecboces.org

If you require additional information, please submit questions to the email above.

The undersigned hereby affirms that (1) he/she is a duly authorized agent of the vendor, (2) he/she has read all terms and conditions and technical specifications which were made available in conjunction with this solicitation and fully understands and accepts them unless specific variations have been expressly listed in his/her offer, (3) that the offer is being submitted on behalf of the vendor in accordance with any terms and conditions set forth in this document, and (4) that the vendor will accept any awards made to it as a result of the offer submitted herein for a minimum of ninety calendar days following the date of submission.

PRINT OR TYPE YOUR INFORMATION

Name of Company		Phone	
Address		Zip	
City/State		Phone	
Contact Person		Title	
Earliest Delivery Date		Email	
Options being bid	<input type="checkbox"/> Lit Service <input type="checkbox"/> Dark Fiber/IRU <input type="checkbox"/> Self Construction		<input type="checkbox"/> Category 1 Equipment <input type="checkbox"/> WAN Operations
Authorized Representative's Signature		Title	
Printed Name		Date	

Appendix C

Spreadsheet for Pricing for all districts in ECBOCES See attached
Use Separate Appendix Document if bidder is bidding only partial sites or a subset of sites as an option.
Respondents may include additional detailed pricing information along with the Appendix C pricing sheet.

Appendix D

Network Diagram for Each proposed service (or hybrid)—Vendors will provide a diagram including

- 1) last mile connections to each district site in appendix A
- 2) designated hub/ aggregation point in carrier neutral locations
- 3) middle mile connections from district aggregation points (if needed)
- 5) additional connections for network reliability and resiliency
- 6) any other locations of significance needed for the design

Appendix E

References—Vendors will provide 3 References

Appendix F

Self Construction Guidelines

The Work is defined as: Project Management

Selected contractor and its subcontractors will provide all project management to accomplish the installation of all project work as outlined in the Statement of Work.

- Provide engineer(s), certified on selected fiber system specifications and procedures to manage all phases of project as outlined in this proposal. This includes ordering and managing the bill of materials as outlined below, directing and managing cable placement and restoration, directing and managing splicing crews and providing detailed documentation at the end of the project.
- Selected contractor and its subcontractors will develop a project management plan, which will include a milestone chart. The milestone chart will outline any critical path events and then track these with the appropriate agency/organization whether; selected contractor, a selected contractor subcontractor or ECBOCES.

Material Management

- Selected contractor and its subcontractors will provide all material management to ensure that the project remains on track according to the project milestones.
- Selected contractor and its subcontractors will develop in conjunction with selected contractor plants and other suppliers a material management plan.

Property Restoration

- All cable routes, which are plowed, will be restored to as near to original condition as possible.

Install overhead and underground fiber optic cable.

- Bore approximately (to be determined based on design) feet of fiber optic cable through innerduct/conduit/handhole system
- Plow approximately (to be determined based on design) feet of fiber optic cable in accordance with selected contractor installation specifications.
- Install customer approved hand-holes and place marker/locator posts.
- ECBOCES will work with contractor to provide entry/exit locations into buildings for routing cables to distribution frames unless otherwise noted.
- ECBOCES will approve specific details of cable placement using aerial photography and cad drawings working with contractor.

Install and Splice Hardware at Head Ends and in the Field

- Install optical hardware and splice field cable to equipment tail at head ends and splice tail to pre-stubbed hardware with SC pigtails.
- Prep closures, cables, fibers and splice fibers at all field locations
- Fiber to fiber fusion splicing of optical fibers at each point including head ends.
- Individual splice loss will be ≤ 0.10 dB for single-mode unless after 3 attempts these values cannot be achieved, then the fibers will be re-spliced until a splice loss within 0.05 dB of the lowest previous attempts is achieved. Splice loss acceptance testing will be based on the fusion splicer's splice loss estimator.
- Total Project Splices: (to be determined based on design)

Final Testing

- In addition to splice loss testing, selected contractor will perform end-to-end insertion loss testing of single-mode fibers at 1310 nm and 1550 nm from one direction for each terminated fiber span in accordance with TIA/EIA-526-7 (OFSTP 7). For spans greater than 300 feet, each tested span must test to a value less than or equal to the value determined by calculating a link loss budget.
- Inspect each terminated single-mode fiber span for continuity and anomalies with an OTDR at 1550 nm from one direction in accordance with OTDR operating manual.

Documentation

- Provide final documentation consisting of:
 - Route "As-Built" Maps/Diagrams
 - End-to-End Insertion Loss Data

- OTDR Traces
- Individual Splice Loss Data

General Scope of Work (Description of all routes)

- Placing approximately (to be determined based on design) feet of new 2 or 4 count SM cable to provide bored fiber connectivity on route that is used to provide connectivity to sites in Appendix A.
- Placing approximately (to be determined based on design) feet of buried 2 or 4 count SM fiber from an existing handhold at addresses listed in Appendix A.
- Placing approximately (to be determined based on design) of buried 2 or 4 count SM fiber from an existing handhold at addresses listed in Appendix A.
- Placing of associated hand holes, marker posts, locator posts, inner duct, and miscellaneous materials.
- Splicing of fiber optic cables as specified.
- Procuring and Provisioning of hand holes and miscellaneous materials required to accomplish the above.

Bid Specifications

- All fiber will be included in the bid, and priced separately for approval by the applicant in addition to turn-key including fiber and construction.
- All splicing shall be by the fusion method.
- All splicing enclosures and Hand Holes shall be of a type to be determined by the owner.
- All Hand Holes shall be Colorado DOT approved, 45,000 lb. load rated CDR or comparable enclosures.
- All plowed cables shall be placed at a depth of 36" along roadways and 24" on private property.
- All road and driveway bores shall be at a depth of 36" and will have a 2" innerduct placed within.
- All buried splice locations will be marked with a locator post and a copper ground wire shall be attached to the splice closure/cable sheath.
- Buried marker posts shall be placed every 1500'.
- A warning tape shall be placed 12" above the buried cable.

- All highway shoulders, schoolyards, and ditch lines will be compacted and restored to satisfactory condition.
- All DOT encroachment permits, railroad encroachment permits, and National Park Service permits shall be submitted by vendor in accordance with the permitting agency requirements.
- The vendor shall be responsible for the payment of any permitting fees.
- Contractor shall furnish an as-built drawing to the owner.
- Contractor shall perform an end-to-end continuity and loss test on each spliced fiber segment and provide the owner with the db loss of each fiber segment.
- Contractor shall be responsible for submitting the appropriate ULOCO locate requests.
- The applicant, will assist the contractor when working with county and municipalities to obtain right of way permission for municipal-owned properties and roadways.
- A minimum of 100' coil of cable shall be left in each Hand Hole/Building for splicing use.
- The ECBOCES shall provide the contractor with secured space to store materials and equipment if needed.

ECBOCES and School District

Responsibilities:

Right-of-Way Acquisition &

Permitting

- Contractor is responsible to ensure that all cable routes have approved access & rights-of-way for all proposed cables installations.
- Contractor will provide any information or points of contact to allow selected contractor and its subcontractors to facilitate the route prep "make-ready" and actual cable installation.
- Contractor is responsible for pulling all required construction permits. Selected contractor and its subcontractors will provide officials at (Applicant) with any information necessary to assist in obtaining these permits in a timely fashion.

Route Maps

- Contractor is responsible for providing; maps, drawings or aerial photographs of the route.

Termination and Splicing locations

- Applicant will in conjunction with selected contractor designate/decide on all termination locations, whether in- building, outside plant or in customer premises. This will include all hand-hole or manhole locations
- Applicant will in conjunction with selected contractor designate/decide on all field splice locations, in-building splice locations (if applicable), or other splice locations necessary to connect the network.

Cable and Hardware Approval

- Applicant will approve all cable and hardware prior to ordering or installation. Selected contractor will provide any required consultation to assist Contractor in this effort.
- Applicant will approve all hand-hole or building entrance hardware prior to ordering or installation. Selected contractor will provide any required consultation to assist Contractor in this effort.

Material Delivery, Receipt & Storage

- Contractor will provide warehouse or yard space to accommodate all materials provided by selected contractor to accomplish this project. Contractor will inspect, receive and issue any materials to provide accountability. This will reduce the overall cost to the applicant with no added costs being placed into the proposal to cover the receipt and storage.

Final Inspection

- Applicant will provide at their discretion a person(s) to witness any final testing or construction verification. The person designated by Applicant will be required to initial/provide acceptance of any results. This person(s) will represent Applicant during any and all acceptance testing. This does not relieve the selected contractor from providing agreed upon documentation or absolve the selected contractor of any warranty support.

Communications

- Contractor is responsible for all communications with its customers or other interested parties concerning the proposed construction. Notification of any person(s) affected by this construction is the responsibility of Contractor. Selected contractor will work directly with any persons designated to handle project communications to facilitate awareness for Applicant. Applicant will work with contractor to assist in the development of a communications plan and determine parties responsible for specific actions within it.

Appendix G

CDOT Manhole Locations

This appendix provides maps for the CDOT manhole necessary and can be found along with this RFP document at <http://www.ecboces.org/2019-wan-rfp>

Appendix H Current WAN Design

