



RFQ #854-19Q Licensed Microwave Backhaul Equipment

**Addendum 001
Issued May 10, 2019**

1. Can you please clarify whether this RFQ is strictly for the purchase/delivery of the microwave equipment or if it also includes installation? The listed NIGP Codes and attached bid sheet indicate material only, but the posting description indicates it is for installation as well.

This is an RFQ for equipment purchase and delivery only. No installation is included.

2. What are geographic coordinates for the sites? (please state the datum used for the coordinates – NAD27, NAD83, WGS84, etc.)

Please request the Cambium LINKPlanner file for this information.

3. On what type of structure will the equipment be mounted at each location? (tower, rooftop, other) Please provide details such as :
- Structure type
 - Height above ground level
 - Existing or new construction required
 - If equipment is to be mounted on a rooftop, is a mast or tripod mount available or is a new one required?

Spring Valley – Calaway: existing building, rooftop mast, ~30'

Sunlight Peak: existing lattice tower, mounting 85-90', tower 110'

Holy Cross Energy: existing building, mounting 25-30', building ~40'

4. Is assistance in coordinating frequencies and getting FCC licenses required in the bid?

No.

5. Have both microwave paths been surveyed to assure clear line of site?
- If so, can you provide the survey report?
 - If not, is this service required in the bid?

Yes, the paths have been surveyed. No additional services are in scope of the RFQ.

6. The RFP states, "CMC will accept products that are compatible with our existing system." Please provide some details about the existing system.
- For instance, are you referring to an existing microwave system, or the network equipment connected to it?
 - What equipment (make/model) will be connected to the new microwave system?
 - What type and quantity of interfaces are required for interconnection to the existing system (10/100/1000BaseT RJ45 copper, 1 Gigabit optical, 2.5 Gigabit optical, 10 Gigabit optical, etc.)?

This statement refers to the existing network equipment. The design currently calls for multiple 1Gbps copper interfaces.

7. What power sources are available at each site to power the equipment?
- 120 Volt AC?
 - 48 Volt DC rectifier? (If so, what is the maximum load supported)
 - Is a new -48 VDC power system required at any of the sites?
 - If new power systems are required at any sites, do they also need battery backup or UPS? If so, how many hours of backup is required?

Spring Valley - Calaway: 120V AC, Sunlight Peak: existing -48V DC, Holy Cross Energy: 120V AC.

8. Will CMC require formal training on the equipment to operate and maintain the requested equipment?
- If so, does CMC personnel have experience operating and maintaining licensed microwave radio equipment? Unlicensed microwave equipment? Other related experience?

Training or other service are not in scope of this RFQ.

9. May we quote related equipment, licensed features, or services that we believe would be of interest to CMC as options to support our bid?

Yes.

10. Depending on the answers to the above questions, additional lines may be required in the bid spreadsheet. May we add lines as needed to cover installation, licensing, power systems, etc.?

Yes.

11. What is the distance from the proposed location for the radios to the connection to CMC's network equipment?
- At Spring Valley-Calaway: ~200'
 - At Sunlight Peak (Radio #1): ~150'
 - At Sunlight Peak (Radio #2): ~150'
 - At Holy Cross Energy: ~200'

12. What are the end point locations? Towers or building roof tops?

Spring Valley – Calaway: roof top mast
Sunlight Peak: lattice tower
Holy Cross Energy: side of building (existing pole)

13. What link availability is targeted at the full 2 Gbps per link?

Availability: at least 99.9%
Availability at full throughput: ~99%

14. Is there a reason why 18 GHz was selected?

Crowded spectrum at Sunlight Peak location.

15. If we can show how 11 GHz could be leveraged to reduce overall antenna sizing on both paths, would that be acceptable?

11 GHz band is unavailable at the Sunlight Peak location.

16. Is the Colorado Mountain College going to self install this microwave solution?

Yes.

17. Would Colorado Mountain College be interested in services to include FCC licensing, installation, link commissioning, and radio test / turnup? Could these be optional proposals to the College?

They may be included as optional items but they are not in scope for the RFQ.

18. Would Colorado Mountain College entertain an OPEX model which would provide the microwave links as a managed service to be operated and maintained by Distributed Antenna Build LLC? This proposal would provide a path to future technology updates and capacity upgrades that are not hardware only dependent.

No.

19. Has FCC licensing been completed for both hops? If so, on what call signs are they licensed?

No. An interference analysis has been completed and PCN issued, so far.

20. Are these new hops or replacements?

New hops.

21. What is the indoor equipment structure type (i.e. shelter, outdoor cabinet, building, etc.)?

Spring Valley – Calaway: building

Sunlight Peak: shelter
Holy Cross Energy: building

22. Is there an available ground bar, with room available for more connections, at the bottom of the antenna supporting structure, as well as at the indoor equipment structure entry point outside, and another ground bar available inside the shelter/cabinet?

Yes.

22. Would you please provide the structural analysis for each antenna supporting structure?

No formal structural analysis is available at this time.

23. Would you please supply any and all pictures of the sites, antenna supporting structures, indoor equipment structures, available rack space, any other applicable equipment locations, structure and tower drawings, network configuration diagram, etc.?

No images or diagrams are available at this time. Other questions and answers address some of what you might be asking for.

24. Would you please confirm you want one (x1) CAT5e Ethernet cable per PTP820C terminal. Otherwise, kindly confirm the desired number of cables per terminal/ODU.

- a. The PTP820C is a dual-core product, meaning there are two radios per PTP820C terminal/ODU. In order to achieve the maximum capacity of the PTP820C radio in the required configuration, a single CAT5e cable per radio core is required (two cables per radio terminal), so four cables per microwave end. Further, if out of band management is preferred over in-band management, then a third CAT5e cable is required. Would you kindly confirm your intended configuration?

Assume the number of cables necessary to achieve 2 Gbps of full-duplex capacity per path. In-band management will be used, but the out-of-band interface/cable should be available to each MDF or shelter.

25. Would you please confirm you will be aggregating the traffic in your own network devices behind the microwave link?

Yes, all aggregation not already handled by the radios will be done by our network devices.

26. Do you want to do in-band-management of the radios (using the same cable to the units, i.e. Management VLAN, etc.)?

In-band management will be used for ongoing operation. Out-of-band management will be available at each MDF or shelter if needed.

27. Would you please confirm you will be using the PoE injectors (N000082L022) listed in the BOM to power the units and that no dedicated DC power cables are required?

PoE is preferred.

28. The Bid Sheet calls for an extended 5-year (standard) warranty which could leave you with a network outage for up to 30 days. Would you like to see pricing options for sparing hardware locally and/or an Advanced Hardware Replacement warranty (Expedited Hardware Replacement)?

Premium warranty options are acceptable as long as they are identified as optional. Hardware sparing is not in scope of this RFQ.

29. Has the required FCC license coordination process begun or been completed?
a. If FCC license coordination has not begun or been completed, would you like to see pricing options for this service?
b. If FCC license coordination has begun or been completed, would you please confirm how many channels (and their respective sizes) are available for coordination (or have been coordinated)? This information is critical to confirm whether or not your desired configuration of 4+0 using XPIC can be successfully implemented, or if another configuration needs to be considered to achieve your desired throughput of 2Gbps.

The FCC license coordination process has begun.

30. How do you plan to monitor the radio network for performance issues, device uptime, etc.?
a. If none exists currently, would you like to see a pricing option for this service?

Device and performance monitoring is out of scope for this RFQ.

31. The RFQ calls for two different antenna manufacturers. Is that intentional and do you prefer to use two different antenna manufacturers and OMT interfaces?

If matching antenna and interface manufacturer are available that meet the size and compatibility requirements, please feel free to propose those instead. Interference analysis and FCC coordination has begun with the design shown on the BoM.