Attachment A
BIDDER RESPONSE TO ETHERNET PERFORMANCE & SERVICE REQUIREMENTS

Bidder Instructions: This section requires the Bidder to attest to its ability to meet the performance and service requirements of this RFQ. **Bidder must confirm that they meet the mandatory requirements by answering yes. Additional comments will not be accepted and may result in disqualification.**

ETHERNET PERFORMANCE REQUIREMENTS:

Section	Name	Mandatory Requirement Description	Mandatory Met (YES/NO)
4.1	Ethernet Performance Requirements Assurance	The Bidder has NO alternative specifications or requirements to those requirements listed in this document.	
4.2	Service Availability	Bidder Ethernet service must be available twenty-four (24) hours per day, three hundred sixty-five (365) calendar days per year.	
4.3	Service Reliability	Bidder service must be available at specified performance for a minimum 99.9 percent of the time during each calendar month.	
4.4	Service Performance	Purchaser is entitled to receive from Bidder the agreed upon bandwidth capacity or better 24 hours per day, 7 days per week for the duration of the service term. For example, if OFM contracts with Bidder for a 100Mbps circuit between two of OFM's endpoints then OFM will always have 100Mbps of capacity available for OFM's sole use between those endpoints. Bidder may oversubscribe their networks as long as OFM packets are not dropped when overall OFM use is within the purchased guaranteed bandwidth profile.	
4.5	Frame Delay (Latency)	The Bidder ten (10) minute average One-way Frame Delay, as defined by the MEF standards in MEF 10.3, must be < 15 ms. One-way is defined as "the time required to transmit a Service Frame from the ingress UNI to the egress UNI."	
4.6	Frame Loss Ratio & Availability (Packet Loss)	Bidder ten (10) minute average One-way Frame Loss Ratio, as defined by the MEF standards in MEF 10.3, must be < .01%. One-way Frame Loss Ratio is defined as "the measure of the number of lost frames between the ingress UNI and the egress UNI."	
4.7	Inter-Frame Delay Variation (Jitter)	The ten (10) minute average for Inter-Frame Delay Variation of the Bidder's service, as defined by the MEF standards in MEF 10.3, must be < 2ms. Inter-Frame Delay Variation is defined as "the difference between the one-way delays of a pair of selected Service Frames."	

4.8	Protocols	Bidder must not impede the passing of any protocol Frames on the Ethernet Virtual Connection (EVC) for the specific type of service (EPL, EVPL, etc…) whilst adhering to the standards set forth in MEF 6 which specifically addresses L2CP protocols. Any impediment or modification of protocol frames not specified by the MEF standards will constitute a service outage. This must include, but not be limited to, topology discovery protocols, routing protocols, multicast protocols, streaming protocols, and voice protocols.	
4.9	Maximum Transmission Unit (MTU)	Bidder must allow the OFM to transmit 9000 byte and smaller frames on all Ethernet transport circuits. Bidder may allow transmission of larger frames.	
4.10	Out of Service Definition	Bidder must accept the definition of "out of service" as the inability to reliably pass data at the purchased rate on any Bidder-managed transport path due to excessive latency, errors, loss or violations as defined in Section 4 – Ethernet Performance Requirements.	
4.11	Service Interface and Termination Requirements	Unless otherwise specified by Purchaser, the interfaces provided to Purchaser locations must be administratively configured for use as a full duplex interface per the resulting Work Order or site agreement as defined below. Handoff less than or equal to 10,000Mbps (10Gbps) must have a 10GBASE-LR LC Single Mode duplex fiber handoff (also referred to as 802.3ae). Handoff of 20,000 Mbps (20 Gbps) shall preferably consist of two (2) 10GBASE-LR LC single-mode duplex fiber handoffs configured as a single Link Aggregation Group (LAG) utilizing Link Aggregation Control Protocol (LACP), providing an aggregate physical interface bandwidth of 20 Gbps. Alternatively, a single 100GBASE-LR4 LC single-mode duplex fiber handoff, is acceptable. Handoff greater than or equal to50,000 (50Gbps) and less than or equal to 100,000Mbps (100Gbps) must have a 100GBASE-LR4 LC Single Mode duplex fiber handoff (also referred to as 802.3ba), unless otherwise directed by Purchaser. K-20 Node sites must receive handoff(s) of 10Gbps or 100Gbps, as defined above. Bidder is responsible for all access and fiber/cabling to the point of service handoff at the customer premise equipment (switch, router, or other point,	

		as defined by Purchaser) Bidder must provide and install a fiber patch cable in the port on the Bidder's equipment that will be used to provide the Service to Purchaser's equipment.	
4.12	Link Integration	If Purchaser orders an aggregated Ethernet service from the Bidder, the Bidder must support Link Aggregation Control Protocol (LACP) via the IEEE 802.3ad standard while keeping in compliance with MEF standards set forth in MEF 10.	
4.13	Equipment Space and Power Please note: This requirement does not include uninterruptible power supply. Contractor will be expected to plug into K20 provided uninterruptible power supply to power their equipment.	Bidder must be responsible for the purchase, installation, configuration and maintenance of all equipment required to provide Ethernet services to Purchaser. Bidder must disclose the type of equipment and the space and power requirements necessary to serve Bidder's equipment. If Bidder's equipment requires DC power, Bidder must be responsible for the purchase and installation of power conversion equipment, unless otherwise directed. If Bidder's total equipment required to provide the Ethernet services to Purchaser exceeds 6 RUs, Bidder must be responsible for the purchase and installation of a cabinet enclosure sufficient to contain Bidder equipment, unless otherwise directed. Bidder must utilize active equipment (typically a NID, NIU or other device delivering the UNI interface) at the service delivery location which allows them to be able to collect usage statistics and performance monitoring as required for compliance with Sections 5.4.4 - *End-to-End Service Monitoring and Test Capability* and Section 5.4.5 - *Error Statistic Reporting*. Equipment may not be shipped to the Site.	
4.14	Ethernet Standards	Bidder Ethernet interface provided at the Purchaser's point-of-presence must adhere to IEEE 802.3 standards for Ethernet, depending on the service purchased at the location by the Purchaser.	
4.15	VLANS	Bidder Ethernet services must provide support for Virtual Local Area Network (VLAN) via the IEEE 802.1Q standard.	
4.16	BPDUs	Except for specific L2CP protocols as specified by the Metro Ethernet Forum (MEF) Ethernet Services	

		Definitions – MEF 6, Bidder must not manipulate any Bridge Protocol Data Units (BPDU) which are sent along the circuit by the Purchaser without the Purchaser's express consent.	
4.17	Spanning Tree Protocols	Except for specific L2CP protocols as specified by the Metro Ethernet Forum (MEF) Ethernet Services Definitions – MEF 6, Bidder must not impede the operation of any spanning tree protocols, including, but not limited to; Spanning Tree Protocol (STP), Per-VLAN Spanning Tree (PVST), Per-VLAN Spanning Tree Plus (PVST+), Rapid Spanning Tree Protocol (RSTP), Rapid Per-VLAN Spanning Tree Protocol (R-PVST), Multiple Spanning Tree Protocol (MSTP), VLAN Spanning Tree Protocol (VSTP), without the Purchaser's express consent.	
4.18	VLAN Tags	In accordance with established standards in MEF 6, Bidder will not rewrite any VLAN tags affixed to packets by the Purchaser, without the Purchasers express consent. The Bidder will also ensure that they do not impede the ability of the Purchaser to utilize 802.1ad tagging, also known as Q-in-Q. In addition to preserving VLAN tags affixed by the Purchaser, Bidder must not require the Purchaser to insert or remove any VLAN tags, at the non-trunk UNI location for the Service, on the Bidder's behalf; all tag manipulation for proper transit through Bidders network must occur on the Bidder's equipment. Examples of this are S-TAG (service tag) or C-TAG (customer tag) insertion or removal by the Purchaser on the Bidder's behalf to ensure proper routing through the Bidder's network.	
4.19	Marking of Traffic	Bidders must not mark or remark any traffic without approval from the Purchaser. The Purchaser will expect that all traffic leaving a site will arrive after traversing the Bidder network with the same markings it left with (QoS, Multicast, etc.).	
4.20	K-20 Node Sites	Bidder must provide services to at least one K-20 Node. Seattle: Westin Building 2001 Sixth Ave 19th Floor Meet-Me-Room Seattle, WA 98121 Spokane: US Bank Building 422 W. Riverside Suite 1401	

		Spokane, WA 99201 Bidder must deliver service to Purchaser's fiber distribution panel at node location. Purchaser will provide CFA/LOA to Bidder. Bidder is responsible for any cross-connects. If Bidder delivers multiple services to one node location, services must be delivered as separate VLANs on one physical interface (as defined in 4.11), unless otherwise directed by Purchaser.	

SERVICE REQUIREMENTS:

Section	Name		Mandatory (YES/NO)
5.1	Service Requirements Assurance	The Bidder has NO alternative specifications or requirements to those requirements listed in this document.	
5.2	Service Reports	Bidder agrees to comply with the delivery timeline service reports to Purchaser as follows in Sections 5.2.1 through 5.2.4.	
5.2.1	Incident Event Logs	Bidder will provide Incident Event Log summary, monitoring and testing statistics and error statistic reports to the Purchaser upon request. • Emergency Repair/Incident log contents are defined in Section 5.4.3 *Incident Reporting* • End to End service monitoring and testing statistics are defined in Section 5.4.4 *End-To-End Service Monitoring and Test Capability* Error Statistics report contents are defined in Section 5.4.5 *Error Statistic Reporting*	
5.2.2	Bidder Emergency Repair/Trouble Log	Bidder will provide a weekly trouble log summary to the Purchaser. Summary must include the date of the repair occurrence, problem found, action taken to resolve the incident, and the total out-of-service time.	

5.2.3	Reason for Outage	Bidder will provide to Purchaser Network Operations Center a written per incident Reason for Outage (RFO). Preliminary RFOs must be provided in writing within 2 hours after an outage has been resolved with complete written RFOs provided within 24 hours. For incidents requiring additional carrier research the RFO is to be updated every 24 hours until such time as a final determination has been made.	
5.2.4	Detailed Diagrams	Bidder will provide to the Purchaser, or their designate, detailed network diagrams for circuits, as requested by Purchaser. These diagrams must be provided in no less than 5 business days.	
5.3	Network Operations	Bidder agrees to maintain a Network Operations Center (NOC) with the following characteristics as stated in Sections 5.3.1 through 5.3.2	
5.3.1	Capabilities	• Provide network and systems support services delivered from the Bidder's NOC. • Perform 24x7x365 call center, monitoring, fault detection, problem isolation, escalation, and restoration management of supported networks and equipment. • Supply and operate technical support tools to perform network management; manage and maintain network and system software products; quality test and implement network support software, and backup/restore for operational systems. • Supply trained operations staff and provide and maintain operations standards and procedures. NOC staff must communicate in English as their primary language.	
5.3.2	Functions	Functions supported by the NOC must include the following:	

		• 24x7x365 Call Center with technically competent staff required • Incident management and reporting (ideally via web access) for network problem reporting, ticket status and shared information • Provisioning support for new circuits, devices, and capabilities on the network • Network Change Control • Network availability reporting • Network traffic reporting • Thresholds and exception notifications	
5.4	Service Repair and Incident Reports	Bidder agrees to provide timely response, communication and pro-active reporting for all service repairs and incidents as stated in Sections 5.4.1 through 5.4.6	
5.4.1	Response to Incident Reports	Bidder must respond to, and confirm receipt of, all incident reports twenty-four (24) hours a day, 365 days per year within thirty (30) minutes of the initial incident report. Subsequent periodic responses must be at least every 2 hours, or more frequently as appropriate.	
5.4.2	Toll-Free Incident Reporting Number	Bidder must have a toll-free Incident reporting number.	
5.4.3	Incident Reporting	For all service incidents, the Bidder Incident Reports (as defined in section 5.4.1) must include the type of problem, estimated time to repair, and Bidder ticket number. Bidder must maintain a repair log listing the date of the repair occurrence, problem found, action taken to resolve the problem, and the total out-of-service time. Only issues affecting Purchaser's service need be logged.	
5.4.4	End-To-End Service Monitoring and Test Capability	Bidder must have the capability of monitoring the service End-to-End (from the provider's demark or beyond) utilizing their own tools and systems and	

		have the ability to perform remote site testing independent of the purchaser as necessary to troubleshoot problems with their service.	
5.4.5	Error Statistic Reporting	Bidder must be able to provide continuous End-to-End Monitoring and error statistics for services they provide to the Purchaser.	
5.4.6	Incident Escalation Procedure	Bidder agrees to provide an incident escalation procedure as part of the Contract. The escalation procedure must identify the individual(s) should be contacted, the order the contact should occur, and what additional Bidder resources will be added at each escalation stage of the incident.	
5.5	Service Maintenance	Bidder agrees to change control procedures for schedule, planned and/or emergency maintenance or testing as stated in Sections 5.5.1 through 5.5.3	
5.5.1	Schedule Routine Maintenance/Testing	Bidder and Purchaser will develop an agreed upon maintenance window of days and times for routinely scheduled maintenance and testing of purchased services. Unless otherwise agreed to by Purchaser, the maintenance window is defined as 10:00 pm – 5:00 am any day of the week.	
5.5.2	Planned Maintenance/Testing Notification	Bidder must notify the Purchaser of any planned maintenance to occur on equipment which services the Purchaser's service which may have the ability to affect the circuit. Any maintenance which will occur outside of the Scheduled Routine Maintenance window will require seven (7) business days' advanced notice and will require pre-approval from Purchaser, and any maintenance occurring within the Scheduled Routine Maintenance window will require three (3) business days' notice.	

5.5.3	Unplanned Emergency Repair/Maintenance/Testing	Bidder must notify the Purchaser, with a brief description of the nature of the problem and actions to be taken for resolution, immediately if emergency maintenance or testing is going to occur that could potentially disrupt the Purchaser's service. Bidder must dispatch repair services within 60 minutes of incident identification. Any dispatch to a K-20 end site must be subject to Purchaser confirmation and approval. If incident involves a K-20 Node, Bidder must arrive at K-20 Node within 90 minutes of incident identification.	
5.6	Service Installation	n/a	n/a
5.6.1	Acquisition of Permits	Bidder will be responsible for the acquisition of any required permits (including but not limited to city, county, state, tribal, federal, or private) required for installation of equipment or otherwise necessary for provision of Services. All required permits must be identified and applied for within 45 calendar days of Work Order execution unless otherwise agreed to in writing by Purchaser and Bidder.	
5.6.2	Coordination of Installation	Bidder is responsible for coordinating with the Purchaser for specific needs or requirements such as facility access, security, and work hours. Bidder must coordinate with Purchaser to schedule project work to allow maximum access to the Bidder while minimizing disruption of Purchaser's business. Installation at end user customer site(s) must be coordinated between 6:00 a.m. and 6:00 p.m., local time, Monday through Friday. Bidder must notify end user customers of scheduled installations at least 24 hours prior to arrival at the site. Bidder must notify and coordinate such dates and times with the Purchaser's designated	

		point of contact (POC) when testing/completing installation of Service.	
5.6.2i	Project Management	Bidder must agree to assign a Project Manager for Purchaser's account who will provide oversite of installation activities. The Project manager must attend and provide updates to Purchaser at a weekly status meeting. If Bidder is using Subcontractors to deliver the Last Mile of the Service, Bidder must agree to require Subcontractor(s) in attendance at the regular weekly status meeting, at Purchasers request.	
5.6.3	Timeline for Installation	Bidder must agree to have the service installed, tested and ready for Purchaser Acceptance at the designated site(s) on or before the Estimated target completion dates in section 2.2 Estimated Schedule of Procurement Activities. Purchaser reserves the right to cancel the Work Order without penalty if Bidder is unable to meet this deadline. Any exceptions will be at Purchasers sole option. It is Bidder's responsibility to coordinate delivery, installation, testing, and making operational all items necessary to provide the Services described in such Work Order.	
5.6.4	Service Acceptance Process	n/a	n/a
5.6.4i	Service Testing Prior to Handoff	Bidder must agree to test their Service prior to notifying Purchaser of completion. Bidder must demonstrate and document that the Service meets or exceeds the Ethernet Performance Requirements, at the bandwidth ordered. Specifically, Bidder testing must include passing results for sections: - 4.5 Frame Delay (Latency) - 4.6 Frame Loss Ratio & Availability (Packet Loss)	

		- 4.7 Inter-Frame Delay Variation (Jitter) - 4.9 Maximum Transmission Unit (MTU) Purchaser recommends Bidder use same test Purchaser uses for Service Acceptance Testing, see section 5.6.4iii.	
5.6.4ii	Service Completion Handoff Email	After Bidder installation of the Service and Service Testing Prior to Handoff is complete, Bidder must notify Purchaser of Service completion via email. Bidder's Service Completion Handoff Email is considered complete when Bidder has provided **all** of the following information to Purchaser. 1) Test results demonstrating the Service meets the Ethernet Performance Requirements at the bandwidth ordered. Refer to Section 5.6.4i. 2) Service Details: i. Site Name (from WO) ii. Bandwidth (from WO) iii. Node CID Number iv. VLAN v. Edge Site CID Number vi. CPE Port 3) Any scheduling directions for coordinated testing. Purchaser assumes no responsibility for delays caused by Bidder's e-mail, network problems or any other party. Zipped files cannot be received by Purchaser and cannot be used for submission of Service Completion Handoff Email. Bidders are responsible for all errors or omissions contained in Service Completion Handoff Email.	
5.6.4iii	Service Acceptance Testing	Purchaser will have twenty-one (21) days from receipt of 5.6.4ii *Service Completion Handoff Email* from Bidder to test the service.	

		Bidder will provide dedicated engineering resources to participate in a Purchaser-scheduled virtual meeting during a coordinated testing window to support Purchaser's test and turn up of the new service. The assigned engineering personnel must have remote visibility into the circuit design and configuration, as well as the technical expertise, system access, and authority necessary to implement real-time configuration changes during the testing window. Such capabilities shall include, but not be limited to, administratively enabling the circuit, modifying VLAN tags, adjusting Maximum Transmission Unit (MTU) settings, and making other necessary configuration changes to troubleshoot and resolve issues. The Bidder shall make these dedicated engineering resources available with no more than three (3) days advance notice from the Purchaser. If the Bidder requires more that three (3) days advance notice to schedule these resources, the additional schedule time exceeding three (3) days will be added to the Purchasers twenty-one (21) day Service Acceptance Testing window. Purchaser will use the ITU-T Y.1564/EtherSAM standard using a single test flow, as defined in Y.1564 §3.2.6. to test the Ethernet Performance Requirements, at the bandwidth ordered, specifically sections 4.5 *Frame Delay (Latency)*, 4.6 *Frame Loss Ratio & Availability (Packet Loss)*, 4.7 *Inter-Frame Delay Variation (Jitter)*, and 4.9 *Maximum Transmission Unit (MTU)*.	

		If Purchaser Acceptance Testing is successful, Purchaser agrees to notify Bidder of the Acceptance Date.	
5.6.4iv	Service Acceptance Troubleshooting	If Purchaser Acceptance Testing is unsuccessful, Purchaser agrees to notify Bidder regarding the testing failure and the nature of the failure and will make appropriate good faith attempts to help the Bidder to resolve the issue. If Bidder is unable to remedy the failure within 30 days of Bidder Service Completion Handoff Email, then Purchaser reserves the right to cancel the service request, at no cost. Upon such cancellation, Purchaser will have the right to procure such services from another provider with no further obligation to Bidder.	

Return to RFQ Coordinator with bid response. Failure to submit may result in disqualification