

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 shall answer with a yes or no in the Mandatory column in the table below.

ETHERNET PERFORMANCE REQUIREMENTS:

Section	Name		Mandatory Met (YES or NO)
4.1	Ethernet Performance Requirements Assurance	The Bidder has NO alternative specifications or requirements to those requirements listed in this document.	YES
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, should 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."	

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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 not exceed 50% of the Frame Delay as defined in Section 4.5. 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 shall 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 shall 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 shall allow the OFM to be able to transmit up to 9000 byte frames on 1G and higher links (not inclusive of Link Aggregation Group – LAG – links, unless one of the subtended circuits on the LAG is of 1G or higher bandwidth). The Bidder shall allow the use of 1500 byte frames on all Ethernet transport circuits.	
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 of 1,000Mbps (1Gbps) or less shall have a 1000BASE-T RJ-45 copper handoff, also referred to as 802.3ab	

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		<p>Handoff greater than 1,000Mbps (1Gbps) and less than or equal to 10,000Mbps (10Gbps) shall have a 10GBASE-LR LC Single Mode duplex fiber handoff, also referred to as 802.3ae</p> <p>Handoff of 100,000Mbps (100Gbps) shall have a 100GBASE-LR4 LC Single Mode fiber handoff, also referred to as 802.3ba</p> <p>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)</p>	
4.12	Link Integration	<p>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.</p>	
4.13	Equipment Space and Power	<p>Bidder shall 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. Bidder must supply an uninterruptible power supply capable of providing at least 4 hours of backup power and use this to power their equipment. 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 - <i>End-to-End Service Monitoring and Test Capability</i> and Section 5.4.5 - <i>Error Statistic Reporting</i>.</p> <p>Bidder must provide and install a patch cable (fiber or copper, as appropriate) in the port on the Bidder's equipment that will be used to provide the Service.</p>	
4.14	Ethernet Standards	<p>Bidder Ethernet interface provided at the Purchaser's point-of-presence must</p>	

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		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	BPDU's	Except for specific L2CP protocols as specified by the Metro Ethernet Forum (MEF) Ethernet Services Definitions – MEF 6, Bidder shall 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 shall 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	

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		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.).	

SERVICE REQUIREMENTS:

Section	Name		Mandatory Met (YES or NO)
5.1	Service Requirements Assurance	The Bidder has NO alternative specifications or requirements to those requirements listed in this document.	YES
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	<p>Bidder will provide Incident Event Log summary, monitoring and testing statistics and error statistic reports to the Purchaser upon request.</p> <ul style="list-style-type: none"> • Emergency Repair/Incident log contents are defined in Section 5.4.3 <i>Incident Reporting</i> • End to End service monitoring and testing statistics are defined in Section 5.4.4 <i>End-To-End Service Monitoring and Test Capability</i> <p>Error Statistics report contents are defined in Section 5.4.5 <i>Error Statistic Reporting</i></p>	
5.2.2	Bidder Emergency Repair/Trouble Log	<p>Bidder will provide a weekly trouble log summary to the Purchaser.</p> <p>Summary must include the date of the repair occurrence, problem found, action taken to resolve the incident, and the total out-of-service time.</p>	
5.2.3	Reason for Outage	Bidder will provide to Purchaser Network Operations Center a written per incident	

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		Reason for Outage (RFO). Preliminary RFOs shall 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 shall 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	<ul style="list-style-type: none"> • 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	<p>Functions supported by the NOC shall include the following:</p> <ul style="list-style-type: none"> • 24x7x365 Call Center with technically competent staff required 	

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		<ul style="list-style-type: none"> • 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	<p>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.</p> <p>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.</p>	
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 providers demark or beyond) utilizing their own tools and systems and have the ability to perform remote site testing independent of the purchaser as	

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		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.	

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5.5.3	Unplanned Emergency Repair/Maintenance/Testing	<p>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.</p> <p>Bidder must dispatch repair services within 60 minutes of incident identification. Any dispatch to a K-20 end site shall be subject to Purchaser confirmation and approval.</p>	
5.6	Service Installation	n/a	n/a
5.6.1	Acquisition Permits	Bidder will be responsible for the acquisition of any required city, county, or state permits required for installation of equipment or otherwise necessary for provision of Services.	
5.6.2	Coordination of Installation	<p>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.</p>	
5.6.3	Timeline for Installation	<p>Bidder must agree to have the service installed, tested and ready for Purchaser Acceptance at the designated site(s) on or before forty five (45) calendar days, where facilities already exist, or ninety (90) calendar days, where facilities do not exist, from the date placement of a Work</p>	

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		<p>Order. 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.</p> <p>If the selected Bidder fails to have the service installed, tested, and ready for Purchaser acceptance at the site within the allotted calendar days, Purchaser may elect to cancel the WO.</p>	
<p>5.6.4</p>	<p>Service Acceptance</p>	<p>After Bidder installation of the service has occurred, Bidder must notify Purchaser of completion of installation of service, using the email template below in this section. Portions of the template in square brackets ([]) must be filled out with appropriate information by Bidder. Purchaser will have fifteen (15) days from normal notification mechanism and receipt of email template to test the service. Service testing will utilize industry standard testing techniques and equipment to determine if the Service meets the Ethernet Performance Requirements, specifically sections 4.5, 4.6, 4.7, and 4.9. Service testing will use the ITU-T Y.1564/EtherSAM standard. Upon successful testing, Purchaser will send notification to Bidder, and Bidder may start billing as of the Acceptance Date. If 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 notifying Purchaser of completion of installation of service, 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.</p>	

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		<p>Email Template:</p> <p>TO: amandar@k20wa.org</p> <p>CC: uw-prov@wa-k20.net</p> <p>SUBJECT: [Carrier Name] [Site Name] Completion Notification</p> <p>BODY: [In addition to any standard handoff documents or language, please provide the following information in the below format.]</p> <ul style="list-style-type: none">• Site Name: [Provided from the Work Order]• Node CID: [Circuit ID Number]• VLAN: [Assigned VLAN ID]• CID: [Circuit ID Number]• BW: [Contracted Service Bandwidth]• CPE Port: [Identifier for the port used on Bidder's CPE device]• Test results demonstrating the Service meets the Ethernet Performance Requirements, specifically sections 4.5, 4.6, 4.7, and 4.9. Bidder provided test results must be based on the ITU-T Y.1564/EtherSAM standard.• [Any specific test and acceptance instructions: Phone number for testing / turn-up, what needs to be referenced, Circuit ID, Order Number, Account Number, etc...]	
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