Hawaiian Telcom
HAWAII'S TECHNOLOGY LEADER™

SCHEDULE B – MANAGED SERVICES
Offer Form OF-4

Provide the hourly rate for Managed Services.

       Hourly Rate: _____**N/A**_____

The State understands that there is 24x7 monitoring with managed services. The hourly rate is for the actual amount of time each month spent analyzing/responding/dealing with the actual services/devices for the customer.

For example: Based on an analysis of customer devices and services required, 5 hours per month of monitoring per month will be needed. The quoted rate is $100 per hour, thus the monthly rate is $500.

If an hourly rate is not appropriate, describe in the space provided below how Managed Services are charged (i.e. monthly).

Hawaiian Telcom Response: Comply.

An hourly rate is not appropriate for Hawaiian Telcom's Managed Services offering. See Appendix 2 (Other Services – More Information) for pricing.

Managed Network Services charges are based on a number of costs including the following components:

1. Approximate monthly touch time for various device types multiplied by the blended salary and benefits hourly rate for staff handling service tickets (blended across tier 1, tier 2 and tier 3 staff)

2. Monthly tools and infrastructure costs allocated across device types

3. Any miscellaneous overhead costs allocated across headcount (staff to maintain tools, administrative staff, etc.)

4. Certification and training costs allocated across headcount

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<u>Offer Form, OF-5</u>

Schedule C – Mandatory Minimum Requirements

[Ref. RFP Section 4.5.3.f, pg. 30]

f. Offer Form, OF-5 Schedule C - Mandatory Minimum Requirements
Offeror shall describe how the mandatory minimum requirements are met on Schedule C. Failure to meet any of these requirements may result in disqualification of the Offeror. Attachments including diagrams and other descriptive information should be labeled with Offer Form, OF-5 and the associated item number. For example, if a separate diagram will be provided with the explanation as to how the requirement is met for item 3.1.1.1, offeror shall state "see attached diagram" in the explanation and attach the diagram labeled with Offer Form, OF-5 Item No. 3.1.1.1.

Hawaiian Telcom Response: Comply.

See Offer Form OF-5 that follows. (4 pages total)

SCHEDULE C – MANDATORY MINIMUM REQUIREMENTS
Offer Form OF-5

3.1.1 Meets the Technical Support Requirements

3.1.1.1   Offeror shall be able to provide toll free telephone support via a technical support center which is staffed 24 hours a day, 7 days a week, 365 days a year (24x7x365).

Hawaiian Telcom Response: Comply.

Hawaiian Telcom offers free telephone and online support, backed by an enhanced Network Operations Center ("eNOC" or "NOC") in downtown Honolulu that is staffed with certified engineers and technicians on a 24x7x365 basis. See Appendix 4 for the Hawaiian Telcom eNOC brochure.

3.1.1.2   Offeror shall initiate troubleshooting within 30 minutes of receiving a call and if necessary, deploy technician's onsite within two Business Hours of problem determination on Oahu and four Business Hours on the neighbor islands.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom trouble shooting begins with customer initiation of a trouble ticket. When a customer trouble call is first received, Hawaiian Telcom will work with the customer to identify their Hawaiian Telcom service and obtain facts about the trouble.

Upon receipt of the trouble report, Unified Contact Center agents will immediately perform a series of front line troubleshooting to attempt a One Touch resolution. If unable to resolve, the trouble ticket routes to Hawaiian Telcom's network support to perform remote diagnostics.

Remote diagnostics allows Hawaiian Telcom to perform trouble isolation before a Hawaiian Telcom technician is dispatched so that if necessary an appropriate technician can be dispatched with the appropriate tools. Using remote diagnostics, Hawaiian Telcom can often clear a trouble without dispatching a technician onsite. Especially for Hawaiian Telcom's IP services, on site dispatch may often be unnecessary because trouble isolation and repair may be accomplished within Hawaiian Telcom's eNOC rather than at the customer's premises.

Hawaiian Telcom will initiate troubleshooting within 30 minutes of receiving a call and if necessary, deploy technician's onsite as listed below.

The technician will provide the customer a final status update after the outage is resolved.

A. **Critical/Priority 1 Trouble** (No connectivity, out of service resulting in critical impact to end users):

If necessary, Hawaiian Telcom will respond onsite within two business hours on Oahu and four business hours on the islands of Kauai, Maui and the Big Island outages. While Hawaiian Tel has a larger staff of technicians on Oahu, Maui, and Kauai, we have two (2) technicians stationed on Molokai and one (1) technician stationed on Lanai.

For a Critical/Priority 1 trouble on Molokai or Lanai Hawaiian Telcom will commit to do the following three steps within four (4) hours:

1. Hawaiian Telcom's eNOC will work to isolate and remediate the trouble remotely

2. As necessary, on-island technicians will troubleshoot the issue; and

3. If neither the eNOC nor the on-island technicians can resolve the trouble, then Hawaiian Telcom will initiate travel arrangements for a technician to fly from Oahu or Maui to Molokai or Lanai to continue trouble resolution.

   As flights to Molokai and Lanai are limited, Hawaiian Telcom cannot commit to a specific time when the Oahu or Maui technician will arrive on Molokai or Lanai.

B. **Major/Priority 2 Trouble** (Moderate to frequent packet loss, excessive errors on the circuit and latency issues. Service is available, but performance is degraded resulting in major impact to end users.):

If necessary, Hawaiian Telcom will respond onsite within eight business hours on Oahu and eight business hours on the islands of Kauai, Maui and the Big Island outages. For the islands of Molokai and Lanai, Hawaiian Telcom will commit to doing steps 1, 2, and 3 noted under Critical/Priority 1 trouble above within 8 hours.

C. **Minor/Priority 3 Trouble** (Low to intermittent packet loss, some errors on the circuit, moderate latency. Service is working, with occasional performance issues resulting in minor impact to end users.):

If necessary, Hawaiian Telcom will respond onsite within twenty-four business hours on Oahu and twenty-four business hours on the island of Kauai, Maui and the Big Island outages. For the islands of Molokai and Lanai, Hawaiian Telcom will commit to doing steps 1, 2, and 3 noted under Critical/Priority 1 trouble above within 24 hours.

3.1.1.3   The Offeror must employ a minimum of five (5) support technicians residing in Hawaii and support all islands where service is offered.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's Network Field team is staffed with significantly more than five (5) highly skilled and trained field technicians throughout the state. There are approximately 260 in-state technicians who reside in Hawaii, available state-wide, in multiple technical capacities to support our residential and business customers.

Behind our technicians, Hawaiian Telcom has the support of engineers and technical support staff across all Hawaiian Islands. The average years of experience of our technical and support staff is 10 plus years. The technical staff's experience dates back to the traditional TDM network to the next generation carrier grade Multi-Protocol Label Switching (MPLS) network.

This breadth of experience and availability puts Hawaiian Telcom as one of the premier local service providers in the State. With on-island presence across all islands including local technical resource pools, central offices and Hawaiian Telcom-owned network and facilities, we're able to address any network and service anomaly and provide the most expedient levels of service to our customers.

3.1.1.4   Offeror shall be responsible for continually monitoring and tracking the outage until it is resolved. Offeror shall provide a final status update after resolution.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom continually monitors and tracks outages until service is restored. We have developed a proven repair and maintenance process that we continually evaluate and improve. The trouble is isolated, and after remote troubleshooting, a technician is dispatched if necessary.

It is Hawaiian Telcom's policy that the Technician who clears the trouble follows up with the customer to provide a final status update.

3.1.2 Meets the Reliability Requirements

3.1.2.1   Offeror shall provide circuit reliability that meets or exceeds 99.99% availability over the past two years for each offered service.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom does meet or exceed 99.99% Core Network Availability.

Exceptions include service interruptions caused by Hawaiian Telcom planned network maintenance activities, maintenance at the customer premises and failure of Customer premises hardware.

3.1.3 Provides Basic Required Services

3.1.3.1   At a minimum, Offeror shall provide Broadband Ethernet to the islands of Oahu, Kauai, Maui, and the island of Hawaii. Offeror shall specify which islands where Broadband Ethernet is available.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom offers broadband Ethernet services to all of Hawaii's major islands: Oahu, Maui, Kauai, the Island of Hawaii, Molokai and Lanai.

OR

Internet Service Provider (ISP) service to Oahu and at least one other island of at least 300Mbps.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom offers ISP services on all islands for 300Mbps and up to 10Gbps or more on a custom basis.

3.1.3.2   All neighbor island services must be able to terminate on Oahu.

Hawaiian Telcom Response: Comply.

Both Hawaiian Telcom's legacy TDM network and next generation data network can provide interconnection from all major Hawaiian Islands to Oahu.

3.1.4 Ownership of Network Infrastructure

3.1.4.1   Offeror shall be directly responsible for the monitoring, management and maintenance of its telecommunication infrastructure and its associated network equipment. Offeror must have direct control of the management and maintenance of its network backbone infrastructure.

Hawaiian Telcom Response: Comply.

As the Incumbent Local Exchange Provider (ILEC) in the state, Hawaiian Telcom owns and has direct management and planning oversight of our network. This eliminates the need to engage outside parties to support and maintain our network plant. This results in a simpler, more expedient customer experience for installations and repairs. Hawaiian Telcom manages, monitors and maintains our statewide network and associated network systems through advanced Element Management Systems (EMS) and proprietary processes and procedures to ensure seamless network integration and lifecycle support. Hawaiian Telcom owns and maintains an extensive network through the State of Hawaii including the associated cable plant and network electronics.

All core components of this network including our MPLS core routers, MPLS access switches, frame relay equipment, DSL access devices, fiber optic transmission devices, and associated support equipment such as environmental controls and power subsystems are monitored 24x7x365 from our Enhanced Network Operations Center (eNOC) located in downtown Honolulu.

_12_ In addition, we are the only provider who owns both Interisland and transpacific subsea cable systems linking Hawaii to the rest of the globe. As of 2022, Hawaiian Telcom has direct ownership in the Hawaii Island Fibre Network (HIFN), Hawaii Inter-Island Cable System (HICS), Paniolo Cable System (PCN) as well as the transpacific, SEA-US cable system which spans approximately 15,000 kilometers and links five areas and territories of Manado Indonesia, Davao in the Southern Philippines, Piti in Guam, Hawaii and Los Angeles in the continental United States.

3.1.5 Existing Installation in the State of Hawaii

3.1.5.1   Offeror shall be an experienced provider of the proposed telecommunication services with existing installation in the State of Hawaii.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom has been serving the people of Hawaii since 1883. Hawaiian Telcom is Hawaii's oldest and largest provider of telecommunications and data network services. Our existing installations support a wide range of commercial, residential, and government customers throughout the State of Hawaii.

Hawaiian Telcom is an experienced provider of broadband layer 2 and layer 3 services, digital subscriber line, Frame Relay (FR), Asynchronous Transport Mode (ATM), point to point dedicated line, Dedicated Internet Access (DIA), ISDN PRI, Business-All-in-One, and Managed Services to customers across the State of Hawaii. Our customer base for these services in the State of Hawaii encompasses the smallest businesses to the largest enterprise customers.

In addition to the proposed telecommunication services, Hawaiian Telcom has an extensive suite of other offerings, which are presented in Section 3.2.1.8 – Other Services.

Offer Form, OF-6

Schedule D – Technical Requirements

[Ref. RFP Section 4.5.3.g, pg. 30]

g. Offer Form, OF-6 Schedule D -Technical Requirements

Offeror shall describe its level of compliance to the technical requirements on Schedule D. Offeror shall submit a detailed explanation, diagrams, and other descriptive information as to how the technical requirements will be accomplished or Offeror shall explain the proposed alternative or modification, if any. Attachments including diagrams and other descriptive information should be labeled with Offer Form, OF-6 and the associated item number. For example, if a separate diagram will be provided with the explanation as to how the requirement is met for item 3.2.1.1.1, offeror shall state "see attached diagram" in the explanation and attach the diagram labeled with Offer Form, OF-6 Item No. 3.2.1.1.1.

Hawaiian Telcom Response: Comply.

13   See Offer Form OF-6 that follows. (54 pages total)

SCHEDULE D – TECHNICAL REQUIREMENTS

Offer Form OF-6

3.2.1   Telecommunications Services

3.2.1.1   Broadband Ethernet

3.2.1.1.1 Broadband Ethernet service shall be offered as a routed (Layer 3) and/or non-routed (Layer 2) service. Services shall offer the ability to support multiple Virtual Private Networks (VPNs) that can be aggregated on a single physical connection but are kept logically separated. Layer 3 services shall support both IPv4 and IPv6 (dual-stack). Layer 2 services shall support large (jumbo) frames. Layer 3 services shall support large MTUs.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's Multi-Protocol Label Switching (MPLS) backbone offers a non-routed Layer 2 service called Enhanced IP Data Service (EIPDS) and a routed Layer 3 service called Routed Network Service (RNS). Both services allow customers to connect and transmit data and time sensitive applications such as voice or video over a single integrated network, resulting in reduced network and operational costs and complexity compared to managing disparate provider networks. Optional Internet access via VLAN, Quality of Service (QoS) capabilities, and multiple VLANs, larger Maximum Transmission Unit (MTU). MTUs and jumbo frames are also offered on both services.

EIPDS is a Layer 2, multipoint wide area network (WAN) data service that utilizes Hawaiian Telcom's owned and operated MPLS network. EIPDS provide customers with an Ethernet hand-off at bandwidths from 3.0 Megabits per second (Mbps) up to 1 Gigabits per second (Gbps) and optical hand off up to 10Gbps at a lower price-per-megabit than legacy data services such as Frame Relay Service or ATM. EIPDS is based on a multipoint carrier Ethernet-over-MPLS IETF standard called Virtual Private LAN Service (VPLS). EIPDS is easy to implement and supports multiple customer sites and configurations with plug-and-play flexibility. As a Layer 2 service, the customer maintains full control of routing, making interworking simple.

RNS is a provider-based IP Virtual Private Network (VPN) implemented on a high performance, Hawaiian Telcom-owned and operated MPLS network. Routing decisions are made at the Layer 3 (network) level, which allows RNS to support any-to-any access independent connectivity. This gives customers the flexibility of accessing the service via Ethernet (via fiber or copper), DSL, Frame Relay, or Private Line access protocols.

Dedicated Ethernet Services provides point-to-point communications with a Layer 2 Ethernet handoff at the endpoints.   It is a fully managed, private, low latency, high-bandwidth and cost-effective point-to-point solution that is secure and reliable and over the Hawaiian Telcom MPLS Network.

Dedicated Ethernet Services

Applications include:

- Data center connectivity
- Disaster recovery and business continuity solutions
- Compliance – Ensure network segregation to meet data security compliance requirements
- Ideal for low latency, high bandwidth data transport
- Scalable – Increase bandwidth as needed

Point-to-Multipoint Ethernet service provides a Layer 2 Switched Ethernet Hub and Spoke network topology solution. It supports delay-sensitive converged applications such as voice and video. It is scalable, reliable and secure and over the Hawaiian Telcom MPLS Network.

Applications include:

- Disparate Endpoints – allowing a Hub and Spoke network topology design
- Dedicated Bandwidth Allocation – Allocate bandwidth by customer use cases or applications
- Compliance
- Shared IT Services (Hub data center to remote sites)

These Broadband service offerings provide the customer the flexibility to choose from a Layer 2 or Layer 3 service and can also take into consideration any-to-any connections using Hawaiian Telcom's legacy services. EIPDS, Point to Multi-Point and/or RNS can be aggregated on a single physical connection and kept logically separated.

Layer 3 services supports both, IPv4 and IPv6 (dual-stack).

3.2.1.1.2   Offeror shall provide encryption services as part of the VPN service

Hawaiian Telcom Response: Exception, with alternatives.

Although Hawaiian Telcom does not provide encryption services on our MPLS network, EIPDS at Layer 2 allows all encryption to traverse the private MPLS network. RNS at Layer 3 allows customers to create VPN tunnels via their CPE routers through the network to allow for proprietary encrypted packets. Hawaiian Telcom's default MTU size is 1,500 bytes; we can increase the MTU size if requested to allow for larger encrypted packets.

Hawaiian Telcom provides add-on services (such as our Multi-Threat Security Bundle) that supports encrypted VPN capabilities, including as part of an SD-WAN VPN.

This exception is noted in proposal Section IV(a) as instructed in RFP Addendum 2, dated 6/03/2022.

3.2.1.1.3   Offeror shall support quality of service, class of service (QoS/CoS) capabilities necessary to support delay-sensitive and drop-sensitive traffic such as voice and video. Offeror shall detail its pricing structure if QoS/CoS is an additional cost item, along with discounts that will be provided.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's EIPDS (L2) and RNS (L3) services offer QoS using either Differentiated Services Code Point (DSCP) or dot1p protocols on either service. Hawaiian Telcom's EIPDS data packets recognize either the dot1p (L2) or the DSCP (L3) protocols if QoS is ordered with the service. This allows our customers to realize end-to-end QoS beginning in the customer's LAN/WAN with QoS'd packets honored within the Hawaiian Telcom MPLS cloud. See Pricing Schedules for QoS costs. Reference table below for QoS values.

| Traffic Type	DSCP	dot1p
Real Time	EF	5
Interactive	AF21	3
Business Priority	AF11	2
Business Best Effort	CS1	1

3.2.1.1.4   Offeror shall be able to provide Layer 3 any-to-any connectivity between the offered Broadband Ethernet service and other offered services.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's RNS service allows for the interconnection of legacy services including Private Line, Frame Relay and DSL to Ethernet ready sites. This any-to-any connectivity gives Hawaiian Telcom's customers the flexibility to convert to Ethernet when ready or stay with their Hawaiian Telcom legacy service until the proper equipment/applications/locations are Ethernet ready.

Connecting legacy services through the RNS cloud will require Hawaiian Telcom to move the circuit from the legacy cloud to the MPLS cloud, yet allowing for the customer's end to remain the

same. Any-to-any connectivity mitigates the customer's migration efforts if they are not ready for Ethernet. The network diagram below shows how a customer can connect Ethernet ready sites along with Hawaiian Telcom legacy sites (Frame Relay, DSL & Private Line) together via RNS.
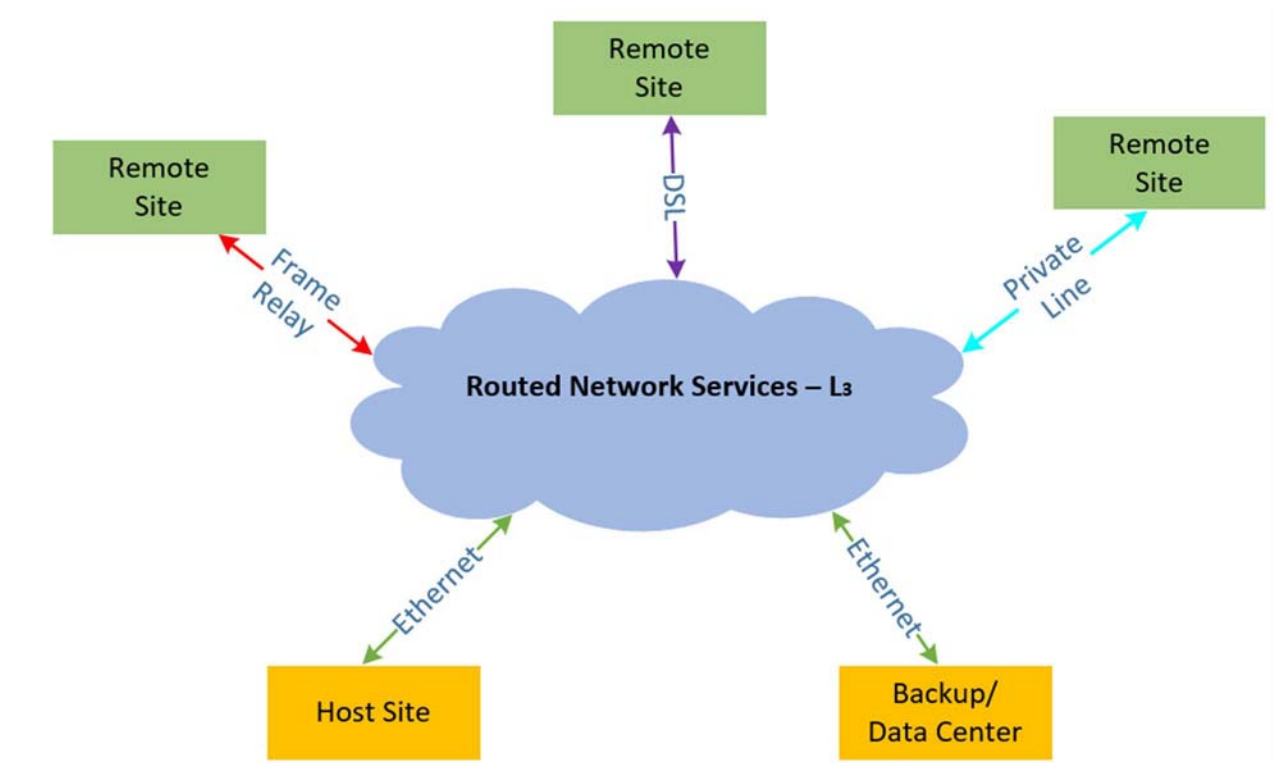
3.2.1.1.5 Offeror shall identify all supported layer 2 and layer 3 protocols.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom supports all standard IEEE, ITU-T and IETF specifications.

3.2.1.1.6 Offeror shall be able to provide up to 100 Mbps of bandwidth per circuit or greater.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's MPLS Ethernet services scale from 10 Mbps up to 100 Gbps per circuit where facilities exist. Fiber facilities are required for bandwidths of 25 Mbps and up; additional charges for fiber builds will be handled on a location-by-location basis.

3.2.1.2   Digital Subscriber Line (xDSL)

3.2.1.2.1 Offeror's Digital Subscriber Line service shall provide a minimum of 1.5Mbps download and 384Kbps upload.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom offers several DSL packages, all of which meet the minimum requirement.

3.2.1.2.2   xDSL circuits should allow for the direct termination into the State's private network.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's DSL Transport services allow connection to the State's existing Frame Relay network.

3.2.1.2.3   Line charges for specific speeds shall be consistent across all supported islands.

Hawaiian Telcom Response: Comply.

All prices are the same, statewide.   A prequalification check will verify the maximum speed/package that each line qualifies for. The customer can then choose which package they wish to order.

3.2.1.3   Frame Relay

3.2.1.3.1   Frame Relay service must include the ability to provide fractional T-1, full T-1, and DS-3 circuits.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's Frame Relay Service provides high-speed throughput over digital facilities at speeds of 56/64 Kbps, 128 Kbps, 256 Kbps, 384 Kbps, 1.536 Mbps, or 44.736 Mbps. Physical access to the Frame Relay network is provided via a UNI Port with Access Line Connection or via either a UNI Port Only Connection or an NNI Port Only Connection with a digital transmission facility.

A 56 Kbps Digital Data Service, DS-1, or a DS-3 rated Special Access Line (SAL) may be used as the UNI Port Only Connection transport link. A DS-1 or DS-3 rated SAL may be used as the NNI Port Only Connection transport link. When available, DS-1 transport must be equipped with both B8ZS capability and Extended Super Frame (ESF).

A High-Capacity Digital DS-3 (44.736 Mbps) rated SAL may be used as the 44.736 Mbps UNI Port Only or 44.736 Mbps NNI Port Only Connection dedicated access link to a DS-3 Frame Relay Service Packet Switch at a transmission speed of 44.736 Mbps. Special transport mileage applies, as appropriate.

3.2.1.3.2   Frame Relay service must offer various levels of Committed Information Rates (CIR) as an option.

Hawaiian Telcom Response: Comply.

Permanent Virtual Circuits (PVC) are the end-to-end logical channels defined in software tables that connect UNIs and NNIs in the Company Frame Relay network as requested by Customer. In order to establish a PVC, Committed Information Rate (CIR), Burst Excess (Be) and at least two DLCIs must be specified.

Committed Information Rate (CIR) is the maximum information rate at which Customer's traffic will be admitted to the Frame Relay network without being designated eligible for discard. No PVC can have a CIR greater bit rate than the lower of the two port speeds connected by the PVC segment.

CIR provides Customer with a mechanism for prioritizing data on a per PVC basis across a given UNI/NNI. A CIR allows a sustained throughput at a chosen rate without having any frames designated "discard eligible" under normal operating conditions.

3.2.1.3.3 Frame relay circuits should allow for the direct termination into the State's private network.

Hawaiian Telcom Response: Comply.

It shall be the responsibility of the customer and the customer's CPE to ensure the Frame Relay circuits are terminated into the State's private network.

3.2.1.3.4 Line charges for specific speeds shall be consistent across all supported islands.

Hawaiian Telcom Response: Comply.

Line charges are uniform across the state of Hawaii.

3.2.1.4 ATM

3.2.1.4.1 ATM service must include various levels of bit rates.

Hawaiian Telcom Response: Comply.

Port - The entry point on the switch to which the Customer is connected - Ports are available which allow connection to the ATM network at speeds of 56 Kbps to OC-12c.

3.2.1.4.2 ATM circuits should allow for direct termination into the State's private network.

Hawaiian Telcom Response: Comply.

3.2.1.4.3 Charges for specific bit rates shall be consistent across the supported islands.

Hawaiian Telcom Response: Comply.

3.2.1.5 Point-to-Point Dedicated Line

3.2.1.5.1 Point-to-Point (P2P) Dedicated Line service shall be offered in various fractional T-1 speeds in addition to T-1, DS-3, and OC-3.

Hawaiian Telcom Response: Comply.

Private Line services provide connectivity between two points as a Point-to-Point service or Point-to-Multipoint service (three or more customer sites) over Dense Wave Division Multiplexing (DWDM) network. Hawaiian Telcom offers private line services via the following speeds:
- Fractional T-1 (N x 56 Kbps or N x 64Kbps, where N = 2,4,6)
- DS-1 (1.544 Mbps)
- DS-3 (44.736 Mbps)
- OC-3 (155.52 Mbps)

3.2.1.6 Internet Service Provider (ISP)

3.2.1.6.1 Offeror shall provide physical Ethernet interface.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's MPLS Ethernet Services provide a physical Ethernet interface on all bandwidths available. The physical handoff for internet connectivity at 3Mbps to 1Gbps is an RJ45 copper Ethernet interface. The physical handoff for internet connectivity at 2Gbps up to 100 Gbps is Single-Mode or Multi-Mode fiber type with either an SC or LC optical Ethernet interface.

3.2.1.6.2 Offeror shall provide ISP connectivity up to 1Gbps or more.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom provides Internet connectivity over 1Gbps and up to 10Gbps.

Hawaiian Telcom also provides Burstable Internet Services (BIS). It is a unique offer carefully crafted by Hawaiian Telcom to address many of the unique needs of our government and business customers. This service provides best-in-class, fiber-based transport and Internet connectivity with bursting capabilities to provide necessary overhead and utilization in times of peak traffic and network load.

Integrated with the service is a cloud based, managed security "layer" that provides a comprehensive, next-generation firewalling solution. Based on industry-leading, Palo Alto Networks threat prevention architecture we provide granular URL filtering, malware protection as well as application identification to perform inspection within the packet header instead of rudimentary, stateful-based firewall inspection.

To round out the offering, we included sophisticated monitoring and management capabilities to provide reporting on bandwidth utilization, bursting as well as alerts and trending data.

3.2.1.6.3 ISP shall optionally offer a 1Gpbs physical interface for speeds less than 1Gbps if the customer is obtaining services of 50 Mbps or more.

Hawaiian Telcom Response: Comply.

An optional feature for a Gbps interface is included for bandwidths 50, 75 and 100 Mbps. Bandwidths of 250Mbps to 1Gbps include a 1Gbps interface.

3.2.1.6.4 ISP shall provide both IPv4 and IPv6 Internet connectivity. New address assignments shall be consistent with IETF Best Current Practices (e.g., IETF BCP 157). ISP shall provide routing for pre-existing portable address assignments.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom does support IPv4 and IPv6 Internet connectivity.

Please note that Hawaiian Telcom cannot guarantee contiguous block assignments. The network blocks assigned by Hawaiian Telcom are non-portable and upon expiration or termination of the service agreement, Hawaiian Telcom reserves the right to retrieve and transfer ownership of assigned public addresses back to Hawaiian Telcom.

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3.2.1.7 Telephone Service Provider (TSP)

3.2.1.7.1 Offeror shall provide ISDN (BRI and PRI), cellular, SIP trunks, or VoIP and PBX services.
[Revised per RFP Addendum 2, as follows.]
Offeror shall provide ISDN (BRI and PRI), ~~cellular,~~ SIP trunks, or VOIP and PBX services.
Offeror should list key features included in their standard VOIP PBX services.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom provides ISDN (BRI and PRI), SIP Trunks, VoIP and PBX services.
See item #1 in Section 3.2.1.8.1 - Other Services for the key features of Hawaiian Telcom's VoIP PBX service known as *Business All In One*.

Also in Section 3.2.1.8.1 - Other Services, are information regarding ISDN BRI and PRI (item #2) and SIP Trunking (item #3).

3.2.1.7.2 TSP shall optionally offer on-premise PBX systems.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom provides on-premise PBX systems, specifically NEC and Cisco. Hawaiian Telcom requires additional data gathering to capture requirements to render a proposal for on-premise PBX systems.

3.2.1.7.3 Calls between islands and to other US states and territories shall be toll-free.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom provides toll-free calling between island and US States with our BAIO Hosted Voice solution.

3.2.1.8 Other Services

3.2.1.8.1 Offer can list additional telecommunications services that are not listed above but would be of value to the State.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom is involved in developing new services on our MPLS network on an ongoing basis. New configurations of voice/data transport services which complement EIPDS, RNS, Internet and other MPLS services are currently being created in our technology labs. These services will be offered to the State as both bundled and unbundled services as they become available. Hawaiian Telcom's ongoing development of new offerings gives the State the largest selection of services, including legacy, next generation and proactive Managed Services to choose from.

Pricing for these advanced services are provided in **Appendix 2.** See **Appendix 3** for Hawaiian Telcom's Advanced Services Brochure for a high-level overview.

1. **Business-All-in-One**

   Business All-in-One, a solution based on voice over IP (VoIP) technology, unifies all of your communications services on a single IP infrastructure. Using Hawaiian Telcom's state-of-the-art network, one converged connection delivers both telephony and data services.

   Previously, businesses had to purchase voice and data services separately. The cost and complexity of choosing the right service, matching it with the proper equipment, and managing it over time could be daunting. With Business All-in-One, you can select a simple, packaged solution that delivers all of your communications needs.

   Included:

   - **High-Speed Internet Access** - Users have their choice of 7 or 11 Mbps download speeds, email, and mobile WiFi access at Hawaiian Telcom hot spots.

   - **IP Phone Service** - Includes unlimited local and domestic long distance calling, individual phone numbers for each user, and a host of standard business class Features.

   - **Advanced Business Features** - Voicemail-to-email, Find Me / Follow Me, Remote Office and other advanced applications are included for every user. A simple web portal gives each employee an easy way to access these features, regardless of location.

   - **Standardized Hardware** - A router and LAN switch are included with the service, eliminating the need to purchase separate internet-working hardware. Individual users can also choose from a variety of IP phones to meet their business needs.

   - **24x7 Maintenance and Disaster Recovery** - Let Hawaiian Telcom focus on your network while you focus on your business. Calls can be automatically rerouted to alternate numbers in disaster scenarios.

   Benefits:

   - **Lower Capital Outlay** – There is no need to purchase a router, LAN switch or phone equipment like a key system or PBX. This allows customers to stop budgeting for equipment obsolescence.

   - **Efficiency** – Add users as you need them, without having to analyze your current services, hardware, and capacities.

   - **Improved Productivity** – A host of advanced features can dramatically improve employee productivity.

   - **Voicemail-to-Email** – Send all of your business voicemail messages to the email address of your choice. Retrieve them from your phone, the web, or any mobile device capable of playing a .wav attachment.

   - **Find Me / Follow Me** – Allow incoming calls to ring simultaneously on your desk, mobile and/or other devices. Each user can individually set up their forwarding rules based upon time of day.

   - **Reliability** – All services are delivered from the cloud over a high-performance, policy-based network which prioritizes your voice traffic over Internet data.

Summary
With Business All-in-One, Hawaiian Telcom offers a simple, comprehensive communications package for all business customers. A single offering combines the services, hardware, and business applications you need to stay connected in this increasingly challenging market.

2. **ISDN (BRI and PRI)**

Basic Rate Interface (BRI) Line - A two-wire facility which extends from a central office to a point of demarcation at a customer location. A BRI Line supports two 64 kilobits per second (Kbps) B-Channels and one 16 Kbps D-Channel (2B+D).

ISDN PRI Service is a central office-based service arrangement that is an alternative for individual access services, such as Direct Inward Dialing (DID), Direct Outward Dialing (DOD), and local business trunks. ISDN PRI is provisioned on a clear channel 1.544 megabits per second facility which is used to connect digital private branch exchanges or other channel controlling devices to the Public Switched Telephone Network. It provides the customer with the capabilities of simultaneous access, transmission and switching of voice, data, and imaging services via channelized transport.

Based on the customer's equipment and business needs, the customer may select an appropriate PRI arrangement from the following options:

- 23 B Channels + 1 D Channel
- 23 B Channels + 1 Back-up D Channel
- 24 B Channels

Rates for ISDN BRI and PRI services are referenced in PUC Tariff No. 20, section 8.5.

3. **Session Initiated Protocol (SIP) Trunking**

Hawaiian Telcom provides SIP Trunking solutions to support customers with IP-based PBX platforms. Native SIP integration will be used where a customer's platform is SIP compatible. SIP Trunking solutions will allow State customers to bundle voice, data and unified communications services on a single MPLS-based IP connection. This will allow the State to minimize/reduce equipment costs, space, power and cooling.

Additionally, the State can use the enhanced SIP functionality to improve disaster recovery, ensure service availability, and deploy over-the-top unified communications solutions such as unified messaging, collaboration, and mobility.

4. **DDoS Defense – Proactive DDoS Protection**
   ❖ DDos Attacks

   DDoS attacks will generally fall into one of three categories:
   - Volumetric DDoS Attacks - Attempt to consume the bandwidth either within the target network/service, or between the target network/service and the rest of the Internet.
   - TCP State-Exhaustion DDoS Attacks - This type of DDoS attack attempts to consume the connection state tables which are present in many infrastructure components such as load-balancers, firewalls and the application servers themselves.

- Application Layer DDoS Attacks - Can be very effective with as few as one attacking machine generating a low traffic rate (this makes these attacks very difficult to proactively detect and mitigate). This always-on option provides a cost-effective alternative using flow-based detection to identify customers that are being targeted by volumetric attacks and automatically reroute traffic destined for the targeted customer through scrubbing technology which surgically removes malicious traffic related to volumetric attacks while allowing legitimate traffic to pass to the customer network.

❖ DDoS Defense

DDoS Defense is an always-on service. It uses a flow-based detection capability to identify customers under attack. It automatically reroutes traffic destined for the targeted customer network through scrubbing technology located within the Hawaiian Telcom network. The scrubbing technology drops malicious traffic related to volumetric attacks while allowing legitimate traffic to pass to the customer network.

See diagrams that follow.
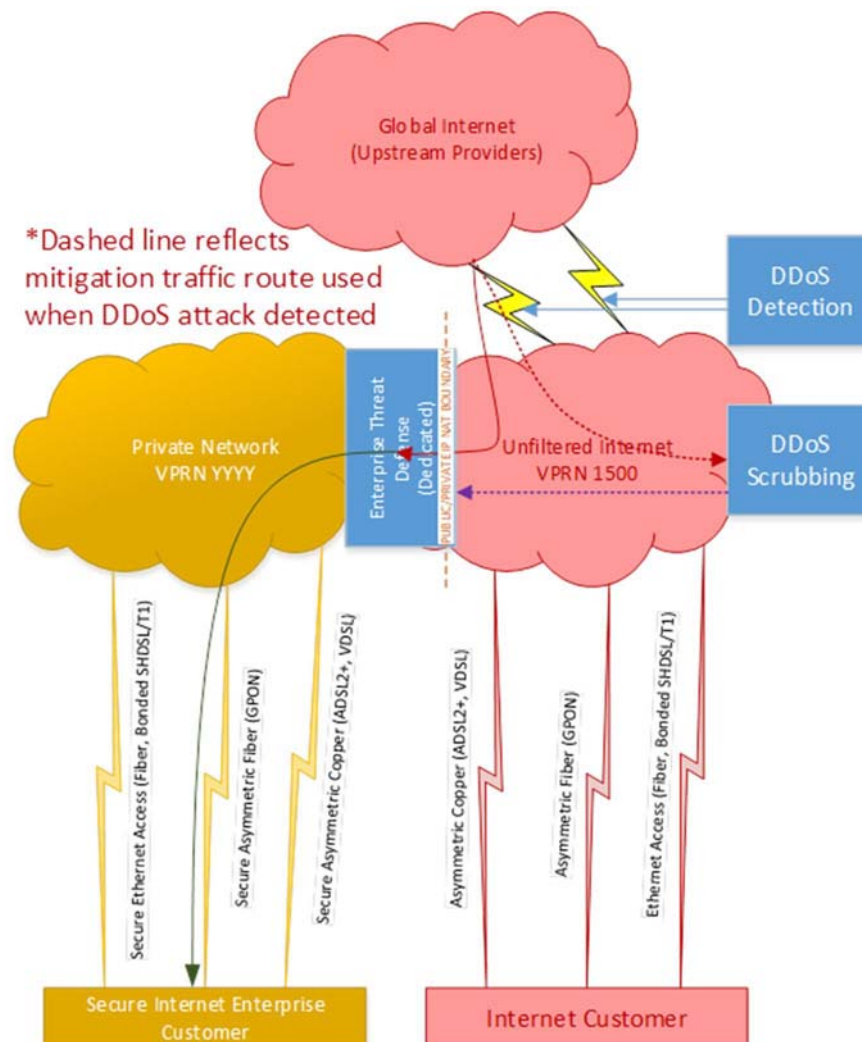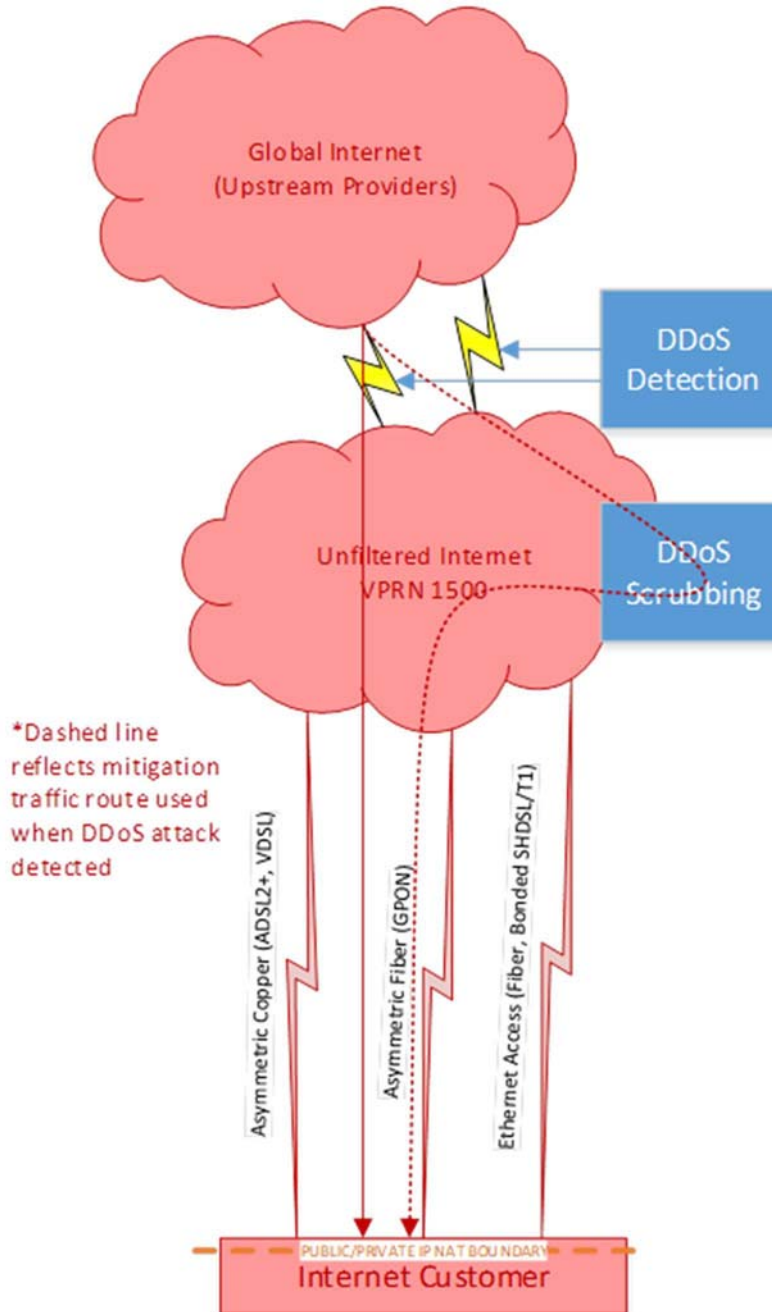
5. **Network Cabling Services**

As part of our services offer, we include full, turn-key installations. This includes infrastructure required to support the service. Certain products and services included in our proposal requires structured cabling to interconnect various components of the network or service. For example, cloud-based VOIP services could require Category 5e or 6 infrastructure to the telephone sets to comply with IEEE 802.3 standards. To simplify the service offering, we are proposing the following cabling options:

Single Cat5e Jack Offering
Provides the materials and installation of one single station line at any location at the same jack. Includes: single RJ series modular jack(s), up to 300 ft. of one 4-pair UTP Cat5e wiring,faceplates & termination. A fixed rate charge per unit will be assessed with the assumption adequate cable pathway, support structures and patch panels are already in place. If pathway modifications or additional customer requested special materials and/or support structures are required, they will be priced on an Individual Case Basis (ICB) dependent on site conditions and/or customer requested special materials and added to the fixed rate charge.

Single Cat6 Jack Offering
Provides the materials and installation for one single station line at any location at the same jack. Includes: single RJ series modular jack(s), up to 300 ft. of one 4-pair UTP Cat6 wiring,faceplates & termination. A fixed rate charge per unit will be assessed with the assumption adequate cable pathway, support structures and patch panels are already in place. If pathway modifications or additional customer requested special materials and/or support structures are required, they will be priced on an Individual Case Basis (ICB) dependent on site conditions and/or customer requested special materials and added to the fixed rate charge.

Dual Cat5e Jack Offering
Provides the materials and installation for one dual station line at any location at the same jack. Includes: dual RJ series modular jacks, up to 300 ft. of two 4-pair UTP Cat5e wiring, faceplates & termination. A fixed rate charge per unit will be assessed with the assumption adequate cable pathway, support structures and patch panels are already in place. If pathway modifications or additional customer requested special materials and/or support structures are required, they will be priced on an Individual Case Basis (ICB) dependent on site conditions and/or customer requested special materials and added to the fixed rate charge.

Dual Cat6 Jack Offering
Provides the materials and installation for one dual station line at any location at the same jack. Includes dual RJ series modular jacks, up to 300 ft. of two 4-pair UTP Cat6 wiring, faceplates & termination. A fixed rate charge per unit will be assessed with the assumption adequate cable pathway, support structures and patch panels are already in place. If pathway modifications or additional customer requested special materials and/or support structures are required, they will be priced on an Individual Case Basis (ICB) dependent on site conditions and/or customer requested special materials and added to the fixed rate charge.

Dual Cat6A Jack Offering

14 Custom installation of Cat6A that assumes adequate cable pathway, support structures and patch panels are already in place. If pathway modifications or additional customer requested special materials and/or support structures are required, they will be priced on an Individual Case Basis (ICB) dependent on site conditions and added to the base installation charges.

Customer Requested Special Material Fee

Allows for customer request or required special materials used for any cabling or pre-wiring enablement. Special materials can be defined as, but not limited to, other brands of materials (e.g., Leviton Patch cords, Leviton Jacks, etc.). These requests will be priced on an Individual Case Basis (ICB).

Pre-Wiring Discovery/ Enablement Fee

Professional installation of pathway modifications and/or additional support structures which are required to complete jack/ wiring installation. Installation requirements are dependent on site conditions, which are quoted upon completed site discovery by Hawaiian Telcom. This will be priced on an Individual Case Basis (ICB).

Travel Charge (Oahu)

A Travel Charge (per order / per tech) will be applied when a site visit or install on Oahu is required and does not involve line(s) or network service. This will be priced on an Individual Case Basis (ICB). Example would be adding jack(s) for computers where no new telephone service is required.

Travel Charge (Neighbor Island)

A Travel Charge billed (per tech / per day) will be applied when site visit or install to Neighbor Island (Maui, Molokai, Lanai, Kauai, Hawaii Island) is required and does not involve line(s) or network service. This will be priced on an Individual Case Basis (ICB). Example would be adding jack(s) for computers where no new telephone service is required.

Hawaiian Telcom Provided Labels

Hawaiian Telcom provided labels, including, but not limited to, labels and labeling of patch cords, phone jack and/or data jack, etc. Customer requirements are to provide premise maps and label nomenclature for new and existing patch cords, phone jacks, data jacks, etc. Hawaiian Telcom provided labels and labeling will be priced on an Individual Case Basis (ICB). Any specific label type, such as brand or material, which are non-standard to Hawaiian Telcom will be priced on an Individual Case Basis (ICB) dependent on customer requested special materials (e.g., Panduit Labels).

6. **Distributed Antenna System**

Distributed Antenna System (DAS) is a solution for poor cellular signal strength in indoor environments. These problems typically occur for one of two reasons:

- Commonly used radio frequency (RF) shielded materials including steel, LEED-certified energy efficient windows, and concrete. These materials can degrade wireless signal strengths.
- Signal quality may be diminished as a result of too many users attempting to access the network, thereby overloading the intended capacity of the carrier's network.

Hawaiian Telcom's fiber-based Distributed Antenna System (DAS) solution delivers in-building cellular coverage with strong, reliable connectivity.

This solution is designed for organizations with large, multi-floor buildings and outdoor areas that lack reliable cell service. The solution supports multiple carriers and delivers:

- 5G-ready infrastructure that is scalable to meet growing usage needs while ensuring lower cost of ownership and the ability to use most available frequencies.
- Higher speeds and lower latency for organizations that are adopting a mobile first approach for employees.
- Enhanced public safety through integration with most emergency notification systems and improved ability to call 911 throughout the building.
- Level of network reliability required for IoT and machine-to-machine learning solutions.

Hawaiian Telcom's DAS solution is available as a service and includes:

- Custom design and engineering.
- Management of installation.
- Carrier on-boarding and management.
- Turn up of network with close-out package.
- Ongoing 24x7x365 monitoring support with monthly status reporting.
- Flexible purchasing options that include optional upfront CapEx, or a monthly OpEx service fee

7. **Centrex**

Supporting more than 20,000 lines statewide, Hawaiian Telcom provides the most reliable and cost-effective telecommunications platform. Centrex is a central-office or "cloud" based service running off the industry-leading, DMS100, GTD-5 and 5ESS intelligent switch architectures. We offer single or multi-line telephony options as well as voicemail and Advanced Intelligent Network (AIN) options including Automatic Call Distribution and Multi-location Centrex (MLCN).

3.2.2   Data Center Services

3.2.2.1   Offeror shall describe data center services that can be offered.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom maintains two data center facilities for customer services in the state of Hawaii. Our primary services data center, Endeavor, is located on the island of Oahu in the Honolulu International Airport area. We also maintain a secondary data center facility in Kawaihae on the island of Hawaii. Both facilities are located outside of flood and emergency evacuation areas. The Kawaihae data center is located away from active volcano zones. HT has been providing colocation and cloud services to customers across the State for more than 10 years.

Endeavor is safely located on the second floor in a facility that is manned by security guards 24x7x365 days of the year. Power and cooling infrastructure are provided with N+1 redundancy and feature diesel generator backups with a minimum of 5-days of supply on the premises.

Other key service specifications include:

- State of the art power, environmental, & security systems
- 99.999% Service Level Guarantee on power & environmental
- Located outside of flood and emergency evacuation areas
- 24x7x365 security personnel providing financial-grade protection
- SSAE18 (SOC I Type 2 and SOC II Type 2) audits completed on physical and virtual colocation solutions
- Adheres to ISO 14644 Class 7 or better clean-room environmental rating

In addition to physical colocation services, Endeavor hosts other cloud services such as cloud compute and backup services.

Our operations and support teams are certified in VMware, AWS, and Azure platforms, and have been providing and supporting cloud services for over 10 years. Private cloud services are hosted out of our state-of-the-art Endeavor data center that features N+1 redundancy on power and environmental infrastructure and is backed by a 99.99% service level guarantee.

Hawaiian Telcom is a Microsoft Gold Partner and CSP with several years of expertise in data center technologies including virtualization, Microsoft 365 and VDI / Terminal Services.

1. Cloud Compute and Storage

Hawaiian Telcom provides both privately hosted and public cloud services. Cloud services have been provided by our experienced staff to customers across the State for over 10 years.

Our private cloud services are conveniently provided at our Endeavor data center here in the State of Hawaii. This enables us to maximize performance for local customers by minimizing the round-trip latency experienced when utilizing the nearest public cloud data centers located on the West Coast of North America.

Hawaiian Telcom's private cloud architecture comprises of Cisco UCS compute servers and all-flash Hitachi storage array with at least N+1 redundancy. These components are tied together using VMware's hypervisor and virtual networking products. We provide a public facing portal to allow customers to self-service their private cloud instances. All virtual workloads are backed up to a dedicated storage array that is completely isolated from production. Our virtual cloud offering can serve as your virtual data center or be a hybrid extension of your existing on-premises data center.

For public cloud services, Hawaiian Telcom partners with the top three public cloud providers for the following services: **direct connectivity, consulting, migration, subscriptions, and support**.

For direct connectivity we extend your Hawaiian Telcom Layer 2 or Layer 3 on-net connectivity to a Los Angeles, CA data center facility. From there we offer direct connectivity to the following public cloud providers: AWS, Azure, and GCP at dedicated bandwidth at speeds ranging from 100Mb to 10Gb.

For customers needing cloud services we can help your staff determine which services are right for your organization's needs and assist in developing a plan to guide you on your journey to a private and/or public cloud solution. If you are already on your way to setting up services in the cloud our staff can provide your team with additional technical assistance to complete the process. Finally, our cloud team can provide ongoing technical and administrative support for your cloud services so your team can concentrate on running your core business services. We also provide Azure Stack Hub services locally to help create hybrid cloud services as well as implementing services for backup, disaster recovery, and business continuity locally and in the cloud.

2. **Workspace as a Service (Hosted Cloud Desktop)**

Hawaiian Telcom Workspace as a Service takes Microsoft's Windows Virtual Desktop (WVD) service to the next level by providing customers with fully automated control over the virtual desktop environment without having to master the Azure Admin portal. Workspace as a Service provides role-based access that gives customers options that range from a totally managed experience to near full control over their WVD environment. Our dashboards provide the flexibility and automation required to allow easy management of complex tasks without the need to work directly in the Azure portal environment.

Workspace as a Service (WaaS) is a secure remote desktop solution engineered to provide a secure and cost effective alternative or replacement for on premise VDI environments. The solution is designed to run in the Azure public cloud or Azure Stack environments and includes the following features:

- Leverages Windows Virtual Desktop 2020
- Client on-premise Active Directory integration (as required)
- Available site-to-Site VPN connectivity
- Encryption at rest (Azure SSE)
- Out of the box anti-virus (Windows Defender)

- Dual-factor authentication (Azure MFA)
- Audited security design
- Configurable Applications
- 200+ Scripted specialty applications are available on request
- Self-managed controls to scale up or down to thousands of users on demand within the Azure Cloud

The solutions also provides enhanced Management and Reporting tools that include the following:

- Purpose designed monitoring templates
- SVD Resources
- Daily connections
- Logon Heat Map
- Current Session Status
- Top 5s – Active Users, Client Operating System, Session hosts etc.
- Session Diagnostic - SVD Errors, Errors - by Source, Errors - Rolling Days
- Connections by User, Applications by User
- Resource utilization and load optimization

Customers may choose between four pre-defined types of desktops: light, medium, heavy, and power.

Example uses for these types are provided in the following table:

Description	Type	Example users	Example apps
Task Worker	Light	Users doing basic data entry tasks	Database entry applications, command-line interfaces
Knowledge Worker	Medium	Consultants and market researchers	Database entry applications, command-line interfaces, Microsoft Word, static web pages
Developer	Heavy	Software engineers, content creators	Database entry applications, command-line interfaces, Microsoft Word, static web pages, Microsoft Outlook, Microsoft PowerPoint, dynamic web pages
Graphic Designer or CAD Operator	Power	Graphic designers, 3D model makers, machine learning researchers	Database entry applications, command-line interfaces, Microsoft Word, static web pages, Microsoft Outlook, Microsoft PowerPoint, dynamic web pages, Adobe Photoshop, Adobe Illustrator, computer-aided design (CAD), computer-aided manufacturing (CAM)

3. Cloud Backup Solutions

Hawaii Telcom provides several cloud solutions to meet the varying needs for data protection and recovery in customer environments. Solutions include:

1. Offsite, secondary backup storage at our Honolulu Endeavor data center or to a mainland US data center

2. Workstation and server direct-to-cloud backups to Endeavor or mainland US data centers

3. Cloud-to-cloud backup solutions including Microsoft 365 backup

4. Managed on-premise backup appliances sized from single TBs of storage to dozens of TBs or more

4. Off-site Secondary Backup Storage

Hawaiian Telcom offers offsite storage for premise-based back-up environments to provide an additional level of redundancy and security for critical data. Storage is available in our Endeavor data center (Honolulu) for faster restores of large amounts of data, or out of state in a secure mainland data center facility. Backups offloaded to our backup repositories are encrypted in transit and at rest.

5. Workstation and Server Direct-to-Cloud Backup

Hawaiian Telcom offers an automated, direct-to-cloud backup service that helps safeguard customer's workstations and servers against accidental deletion and data corruption. Backups are securely located in a mainland US data center. This solution is ideal for small or remote offices – or remote workers – that don't warrant the cost and complexity of an onsite backup appliance.

Features of this lightweight, agent-based solution include:

- End-to-End encryption inflight and at rest
- Industry leading deduplication and compression technology
- Optional on-premise backup copy for faster restore capability
- Full application awareness for advanced applications
- File level restore or full system recovery to original or alternate locations
- Optional automated recovery testing

6. Cloud-to-cloud Backup – Including Microsoft 365 Backup

For data that resides in cloud environments such as Azure and AWS, we offer backup storage for data in these environments to alternate cloud data centers. This provides users the convenience of cloud scalability, reliability and accessibility, with the redundancy offered by using a secondary data center.

For Microsoft 365 (or Office 365) data, we offer a direct to cloud backup solution that provides automated, long-term cloud backup services that safeguards the Microsoft 365 environment

against accidental deletion, gaps or confusion around retention policies. It also protects against internal and external security threats such as rogue applications or disgruntled departing employees while providing mechanisms to address legal and compliance needs. Our solution provides a secure, scalable, and affordable solution for customers with Microsoft 365.

- Utilizes a secure encrypted cloud-to-cloud tunnel between the Microsoft 365 environment and backup to a cloud repository at a US Mainland data center, bypassing local bandwidth concerns.
- Ability to protect an entire Microsoft 365 stack of Exchange Online, One Drive for Business, Teams, and SharePoint Online
- Allows recovery of individual mailboxes, messages or files from Exchange Online, SharePoint Online, Teams, and OneDrive for Business either back to the cloud or to another location
- Simple and predictable pricing model per-user with long-term retention and storage

7. Managed Backup Appliance

Provides automated, on-premise and secondary cloud backup services that helps safeguard a customer's compute environment against accidental deletion and data corruption. It also protects against internal and external cyber threats such as rogue applications or disgruntled departing employees while providing mechanisms to address legal and compliance needs.

Features:

- Ability to securely protect a customer's entire critical business system's data set with a selection of field upgradeable backup appliances from single terabytes of storage to dozens of terabytes
- Hardened backup appliance provides immutability to protect against ransomware
- Backup copies kept in an offsite data center to provide additional defense from ransomware

8. DRaaS (Disaster Recovery as a Service)

Hawaiian Telcom offers a comprehensive set of business continuity and disaster recovery (BCDR) solutions. From discovery to design, Hawaiian Telcom has the expertise to assist in all aspects of disaster recovery plans to ensure your business loss is at a minimum. Our solutions are selected to provide seamless transitions between production and DR site(s) and specified with customer's needs for RPO/RTO thresholds from near real-time to less aggressive recovery targets for non-business critical workloads.

A high bandwidth, dedicated circuit for data transfers and replication is not a requirement due to the advanced compression algorithms of our solution. Our experienced architects have the ability to scope your BCDR requirements and build a solution that meets your needs utilizing one of Hawaiian Telcom's Data Centers or one of the major public cloud providers. Furthermore, failover testing is possible without affecting production to meet your internal disaster recovery audit requirement.

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9. Colocation Services

The Endeavor Data Center offers a variety of move-in ready, physical colocation options, ranging from as little as 2U to fractional half cabinets, full cabinets and dedicated cages. All cabinets within the data center have redundant PDUs (A side and B side) with diverse power feeds to different RPPs.

Being a carrier neutral data center, Endeavor is able to provide network connectivity to all the major Internet Service Providers in Hawaii utilizing diverse route paths. All environmental and power facilities maintain at least N+1 redundancy and are backed by diesel generators with a minimum of 5-days of onsite fuel storage.

Security controls include on-site personnel on a 24x7x365 rotation schedule. Access to our facility requires multiple secured points of entry requiring a valid access card and two-factor access with biometrics. For convenience, an enclosed work room is available and available for reservation d when working on extended projects.

With over 10 years of data center management, Hawaiian Telcom has the knowledge and expertise to keep your mission critical workloads online and always connected. All general support and emergency requests are handled by our 24x7x365 NOC team. Endeavor's built-in redundancy allows us to offer a 99.999% Service Level Guarantee on power & environmental facilities.

3.2.3 Managed Services

3.2.3.1 Offeror shall describe optional managed network services that can be offered, such as security, network connectivity, and device monitoring and management.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom has a large locally based, highly certified technical staff of IT engineers. We have been providing a full suite of Managed and Professional Services for well over 10 years, specializing in Network and Security services. More recently, our state-of-the-art Datacenter, Managed IT services, and Cloud services teams have allowed us to create holistic technology solutions for organizations across the State of Hawaii and the Pacific region.

Hawaiian Telcom's NOC and SOC staffing philosophy is geared toward ensuring that the team is comprised of experts from all major disciplines of computing, including networking, server administration, forensics, malware analysis and security incident management. These individuals are passionate about their respective fields and are willing to conduct independent research to keep up with the latest threats. We strive to hire the best local talent available and improve their capabilities by including extensive internal and external training programs.

Our staff maintains over 300 of the highest levels of certifications for vendors such as Cisco, Palo Alto, Fortinet, Microsoft, Amazon, Google, SANS, ISC^2 and other top enterprise vendors. We also maintain professionally training field support staff on all major Hawaiian Islands.

What follows is a suite of Managed Services across our portfolio that we feel best complements the telecommunications offerings in this RFP.

I.   Managed Network Services (MNS)

Customer-Owned CPE Based Solutions

Hawaiian Telcom offers two tiers of managed network solutions for the customer's existing or newly purchased hardware (CPE-Based Solution). These services enhance our customers' broadband networks by providing network engineering expertise, 24x7 monitoring for availability and performance, and on-demand technical support.

Service Level Short Description:

❖   **BASIC MNS – Device Availability and Performance Monitoring**

- 24x7 ICMP and SNMP Monitoring by Hawaiian Telcom's NOC
  - ICMP Monitoring (Availability, Ping Loss)
  - SNMP Monitoring (Power Supply, Fan, Heat, Bandwidth Utilization, Memory Utilization, CPU Utilization, WAN Interface Status)
- 24x7 Notifications of Out-of-Service or Critical Performance Conditions
- 24x7 Email and Phone Notifications

❖   **STANDARD – Device Configuration Management**

- 24x7 ICMP and SNMP Monitoring by Hawaiian Telcom's NOC
  - ICMP Monitoring (Availability, Ping Loss)
  - SNMP Monitoring (Power Supply, Fan, Heat, Bandwidth Utilization, Memory Utilization, CPU Utilization, WAN Interface Status)
- Out-of-Band Monitoring, optional for additional security
- 24x7 Notifications of Out-of-Service or Critical Performance Conditions
- 24x7 Email and Phone Notifications
- Remote troubleshooting of CPE
- Customer Portal
- On-Boarding Assessment of Devices
- Automated Backup Configurations
  - Weekly and "On-Change" Backups of Configuration Files
  - 24x7 Support to Restore Configuration Files to Restore Services
- Software Patches and Upgrades; Hardware Maintenance
  - Applications of Critical Patches as Necessary
  - Upgrades of Firmware and Software Quarterly
  - 24x7 Support for Open, Follow-Up and Close Tickets with Vendors to Resolve issues

- o Support to Replace Covered Hardware and Components
- Hawaiian Telcom executes Configuration Management and Policy Changes
- For Cyber Security Devices (Firewalls, IPS, Unified Threat Management)
  - o Monitor Device to Validate Vendor Signatures are Up-to-Date and Apply the Latest Signatures
  - o Monitor and Configure Device to Ensure Default Vendor Signatures are Active and Operating

II. Bundled Services and Custom Solutions

❖ **Managed Next-Gen Firewall – Multi-Threat Security Bundle (MTSB)**

In addition to our portfolio of Managed Network Services, Hawaiian Telcom offers a turnkey managed next-gen firewall offering for networks with up to 100 users. This is a cost-effective solution for small departments and branch offices to implement strong and multi-disciplinary defenses against cyber security threats.

This offering, Multi- Threat Security Bundle (MTSB), includes a Unified Threat Management (UTM) device, Managed Network Services STANDARD, installation, reporting, and on-site repair service for a flat monthly charge. The MTSB aligns with the CISA "Shields Up" guidance for state and federal organizations to help reduce the likelihood of a damaging cyber intrusion while enabling a prompt response to potential threats.

SD-WAN (Software Defined Wide Area Networking) can be enabled on the MTSB devices for branch offices looking to increase connectivity options.

- UTM Firewall
- Intrusion Protection (looks deeper into network traffic)
- Web Content and URL Filtering
- Anti-Malware
- Application Control
- Optional site to site and remote access VPN
- Optional SD-WAN service
- 24x7 Monitoring and Support

III. Custom Solutions

❖ **Managed Hardware Services (Hardware as a Service)**

Hawaiian Telcom's Managed Hardware service provides turnkey, fully lifecycle-managed, enterprise network infrastructure solutions for a flat monthly fee. For ease of life-cycle management, the equipment remains the property of Hawaiian Telcom.

The service includes field installation, configuration to customer's specifications, performance monitoring and ongoing configuration management, maintenance, and support. Services are to the same specifications as our MNS STANDARD offering with the inclusion of on-site repair service.

Infrastructure solutions available include:

- Access and campus switches

- Distribution and core switches

- Branch routers

- Aggregation and core routers

- Unified Threat Management Firewalls

- SD-WAN appliances

- Wireless Controllers

- Wireless APs (minimum of 3 per site)

- Backup Appliances

Our Managed Hardware service complements telecommunications services by providing a turnkey set of infrastructure services that improves reliability and operational security and helps tie together wide area networks, Internet, Data Center and unified communications services. With this service model, State and County agencies and departments can turn over complete installation, configuration, and life-cycle management of their networks to a Hawaiian Telcom's highly skilled and experienced Managed Services operational staff.

IV. Network and Security Professional Services

For customized services outside of the scope of our standard Managed Services offerings, Hawaiian Telcom offers the following categories of professional services:

❖ **Network Consulting**

Assessment: Services include architecture/design, documentation, configuration, and network performance reviews to validate current network design against industry best practices, requirements for planned upgrades, network management best practices. The Professional Services team may utilize automated tools as needed to gather network performance data. The deliverable at the end of these engagements is a report of findings, risks, and recommendations. Scope is tailored to the needs and budget of the customer requesting the assessment and must be negotiated prior to the start of the engagement.

Engineering: Services include network engineering and network management tasks in support of network implementation, reconfigurations, and ongoing operations. Deliverables may include developing design documentation, preparing configuration templates, implementing network management systems, performance of ongoing network

management services not covered by our standard Managed Services offerings, and related activities. Scope is tailored to the needs and budget of the customer requesting network engineering services and must be negotiated prior to the start of the engagement.

❖ Security Consulting

<u>Assessment</u>: Services include security architecture/design, documentation, and policy reviews as well as internal or external vulnerability testing and penetration testing to validate current network security posture against industry best practices, compliance requirements. The Professional Services team may utilize automated tools to identify security vulnerabilities as defined within the scope of the engagement. The deliverable at the end of these engagements is a report of findings, risks, and recommendations. Scope is tailored to the needs and budget of the customer requesting the assessment and must be negotiated prior to the start of the engagement.

<u>Engineering</u>: Services include security engineering and security management tasks in support of network security device implementation, reconfiguration, and ongoing operations. Deliverables may include developing design documentation, assisting in drafting security policies, preparing configuration templates, implementing security solutions, performance of ongoing security management services not covered by our standard Managed Security Services offerings, and related activities. Scope is tailored to the needs and budget of the customer requesting security engineering services and must be negotiated prior to the start of the engagement.

<u>Training</u>: Services include security awareness training and incident response preparedness. Deliverables may include designing and implementing security training programs, developing, documenting, and practicing intrusion response protocols. Scope is tailored to the needs and budget of the customer requesting security engineering services and must be negotiated prior to the start of the engagement.

❖ Managed SIEM\SOC

The centerpiece of the Hawaiian Telcom Managed Security service offerings, the Managed SOC service provides a 24x7 monitoring and alerting team for your organization. A core requirement of compliance, SIEM and Log management is made easy through this service offering. This service consists of three major functions: SIEM, Intrusion Detection, and Log Management.

❖ Managed SIEM, IDS, and Logging

Our fully managed solution creates an instant security operations center for your business at a fraction of the cost of building your own. During the pre-sales process, a Hawaiian Telcom security architect will work with your organization to identify business critical assets. Assets can include just about any system with an IP address that generates system log data and may be a target for attackers. The architect will build a custom monitoring solution for your business that ensures data is collected from your most

important technology assets. Pricing is based on the number of assets and the size and duration of log retention.

Our engineering team will help direct data sources to our secure cloud based SIEM (Security Information and Event Management) tool for advanced analysis by multiple threat intelligence sources. The SIEM correlates event data to known threat indicators and generates alarms for our SOC analysts to investigate. Each alert is classified according to the MITRE ATT&CK framework, helping your IT security team prioritize their efforts for planning and remediation. Our engineers regularly review alert data with you, making recommendations for additional actions or suggestions for tuning the SIEM to reduce non-impactful noise to your organization.

In addition to the fully managed SIEM, our solution includes an appliance based IDS system physically installed to your network. The IDS will span traffic from a core network switch, allowing additional detection for traffic going on inside your corporate network. While standard UTM firewalls are utilizing IPS functions at the network perimeter, the IDS analyzes data sources communicating with each other. This type of system is essential for identifying high-risk traffic and for identifying potentially compromised hosts. IDS activity is an important tool for responding to potential security breaches by helping to identify the source and target systems, speeding up the response time to contain.

The final component of our Managed SOC solution is log management. Most businesses are required by federal and local compliance laws to maintain 1 year of log data. Our standard solution provides 365 days of cold, long term storage and 30 to 90 days of hot searchable data storage.

❖ **Managed Helpdesk Services**

Hawaiian Telcom's Helpdesk as a Service offering is a flexible and all-inclusive call center solution for long-term or short-term customer engagements. Agents are trained on a wide range of technical and non-technical skill sets and support multiple languages to ensure your customers get the best answers available easily and efficiently. The scope for each helpdesk engagement is customized to fit the needs of the customer in terms of support hours, IVR, and reporting. Hawaiian Telcom's Helpdesk service uses your phone numbers routed to our IVR system with staffing solutions to match your targeted SLA and agent availability requirements.

❖ **Managed IT Services**

Hawaiian Telcom's Managed IT service is a complete IT solution to help manage your workstations and servers, support your cloud-based solutions, and most importantly, help your user's leverage technology to meet your organization's needs. Service includes 24/7 server and workstation monitoring, proactive monitoring and maintenance to keep your environment secure, managed endpoint security, and optional cloud-based backups. In-scope services are provided at a flat monthly rate and include:

- **Server Support**

  - 24/7 Monitoring
    - Up/Down monitoring
    - Critical application errors
    - CPU/RAM/Disk utilization

  - 24/7 Response for critical service impacting events
  - M-F 8-5 support for all other issues.
  - Server-Side application support and troubleshooting
  - Customer server hardware troubleshooting (if applicable)
  - Microsoft patching
    - Monthly server patching during designated maintenance windows
  - Endpoint security software and management
  - Monthly reporting and trend analysis
  - Active Directory user management

- **Workstation Support:**

  - 24/7 Monitoring
    - Up/Down monitoring
    - CPU/RAM/Disk utilization
  - Microsoft patching
    - Monthly patch review and approval, installed during designated nightly maintenance window
  - Endpoint security software and management
  - Monthly reporting and trend analysis
  - Unlimited helpdesk support for end-users. Includes:
    - Workstation application support and troubleshooting
    - Workstation hardware support and troubleshooting

Solutions can also be customized to provide select services in customer / Hawaiian Telcom co-managed scenarios.

❖ **Managed Endpoint Security**

Hawaiian Telcom's managed endpoint security service provides enterprise-class EDR supported by a 24/7 local Security Operations Center. Our advanced endpoint security solution provides behavior-based protection that can help detect unknown threats that signature-based solutions can't detect. Our service includes deployment of software agents, troubleshooting host performance issues, and managing application exceptions to ensure your organization stays secure. We provide security monitoring and alerting for malicious activity across the hosts along with monthly reporting. This service is available in both managed and un-managed solutions.

Our locally staffed SOC experts monitor and triage abnormal behavior and work with you to lock-down infected devices and support customer endpoint remediation efforts.

3.2.3.2 Offeror shall allow a potential customer to try the service for 30 days without charge.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom will offer a free 1-month trial period for non-ICB monthly recurring Managed Services offerings once a contract has been signed. Due to the extensive level of effort required to establish services, the trial will not be offered without a contract during this period. The customer may cancel the service in writing and will not be billed for termination. Upon completion of the 30-day trial period, Hawaiian Telcom will begin billing per the contract.

3.2.3.3 Offeror shall ensure that all confidential information including network configurations, network diagrams, and IP addresses remain confidential and is only used to provide monitoring and management support.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's Managed Services team takes the confidentiality of customer data seriously. Access to servers that are used to store sensitive customer data is restricted to those involved in provisioning and operation of our Managed Services offerings. In order to validate the security of the systems used to provide Managed Services, Hawaiian Telcom's Information Security team conducts regular internal assessments of the systems.

Additionally, Hawaiian Telcom contracts a 3rd party to conduct annual penetration testing against the systems to detect any security vulnerabilities. Hawaiian Telcom completes annual SOC I and SOC II reporting on the Advanced Service offerings.

3.2.4 Provider Network

3.2.4.1 Industry Standards

3.2.4.1.1 Offeror shall meet and be in compliance with the following industry standards:

- Telecommunication Industry Association/Electronics Industry Association (TIA/EIA)
- Internet Engineering Task Force (IETF)
- International Telecommunication Union (ITU)
- American National Standards Institute (ANSI)
- Building Industry Consulting Service International (BICSI)
- Institute of Electrical and Electronic Engineers (IEEE)

Hawaiian Telcom Response: Comply.

As a normal business practice in delivering Hawaiian Telcom services, Hawaiian Telcom solutions adhere to and follow the identified Industry Standards listed above.

❖ **Discussion Phase Request**

15 **Section 3.2.4.1 Industry Standards and Subsection 3.2.4.4.4**
What are your limiting factors to not being able to meet the Service Level Agreement (SLA)?

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Hawaiian Telcom Response: *(reference Discussion Letter No. 1, 9/21/22)*

Under certain circumstances, Hawaiian Telcom will take exception to meeting Service Level Agreements (SLA), Service Level Objectives (SLO) and Service Level Guarantees (SLG). These circumstances include but are not limited to:

Commercial power at the customer premise, or other location not managed by HT that terminates and/or powers Hawaiian Telcom network equipment and elements

- Inadvertent mishandling of Hawaiian Telcom equipment and/or network elements at the customer premise or other location not managed by HT, by non-Hawaiian Telcom personnel that affect the performance and/or functionality of the network equipment

- Force Majeure events including, but not limited to, natural causes (fire, storms, flooding), government or societal actions, etc., that adversely affect the availability and/or performance of the Hawaiian Telcom network

- Unplanned and unforeseen fiber cuts caused by actions outside of planned maintenance by Hawaiian Telcom

3.2.4.2   Interisland Network (for Offerors providing services on island other than Oahu)

3.2.4.2.1   Offeror shall provide a diagram of its interisland fiber network and Point of Presence (POP) switch locations.

Hawaiian Telcom Response: Comply.

Please see the "Interisland Fiber Network" diagram in **Appendix 1**-Confidential Information.

3.2.4.2.2   Offeror shall explain what parts (of the fiber network and switches) it owns and leases and what parts are owned by partner carriers.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom owns the vast majority of its fiber network and equipment in the State. However, in order to diversify critical inter-island paths, we have partnered with other carriers to provide path and carrier diversity.

Please see the "Interisland Fiber Network" diagram in **Appendix 1**-Confidential Information.

3.2.4.2.3   Offeror shall describe its POP switch type and switch capacity.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom utilizes Alcatel Lucent 7750 Service Routers at its POP locations. This platform has capacity ranging from 90Gbps to 2Tbs. See the "Alcatel-Lucent 7750 SR" datasheet for more details of this platform in **Appendix 1**-Confidential Information.

The POP locations extend beyond the 7750 sites, include most of Hawaiian Telcom's Central Offices, and therefore there is a wider array of equipment that could be housed at these locations.

The network diagrams provided in **Appendix 1** show the company's network footprint and points of presence.

3.2.4.3 Interstate Network (for Offerors providing ISP or TSP services)

3.2.4.3.1 Offeror shall explain its interstate fiber network and identify the network redundancies in place.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom leases 10Gbps IRU's from each cable system (AAG and JUS) between Hawaii and 1 Wilshire, Los Angeles, California. All terrestrial facilities connecting the cable landing stations to Hawaiian Telcom's POP are served via protected SONET systems riding on fully diverse fiber paths.

Please see the "Transpacific Cable and Landings – Pacific Region" diagram and "Transpacific Cables and Landings – Oahu" diagram in **Appendix 1**-Confidential Information.

3.2.4.3.2 Offeror shall provide diagrams of its interstate fiber network and switch locations.

Hawaiian Telcom Response: Comply.

Please see the following diagrams in **Appendix 1**-*Confidential Information*:
- Transpacific Cable and Landings – Pacific Region
- Transpacific Cables and Landings – Oahu
- Internet Peering

3.2.4.3.3 Offeror shall explain what parts it owns and leases and what parts are owned by partner carriers.

Hawaiian Telcom Response: Comply.

Please see the following diagrams in **Appendix 1**-Confidential Information:
- Transpacific Cables and Landings – Oahu
- Internet Peering

3.2.4.3.4 Offeror shall explain how it is connected to its international fiber networks.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom has co-location space at all major cable landing stations which allows interconnections with any international carrier present at cable landings.

3.2.3.4.5 Offeror shall provide a diagram showing how internet traffic (including SIP) is routed from the State and within the state with other Hawaii-based organizations and telecommunication providers.

Hawaiian Telcom Response: Comply.

Please see the "Internet Peering" diagram in **Appendix 1**-Confidential Information.

3.2.4.4 Network Design Objectives

3.2.4.4.1 Offeror must describe the design objectives used to minimize "over subscription" conditions on its network and the procedures used to ensure these objectives are met. Offeror must provide its current performance including substantiating documentation

Hawaiian Telcom Response: Comply.

The primary design methodologies implemented to ensure over subscription conditions do not impede the service performance guaranteed through Hawaiian Telcom's Service Level Agreements are core link capacity management, and more importantly service queue management. The Hawaiian Telcom core network is managed and capacity planned to ensure adequate link capacity is available for full service restorations in the event of a link failure condition. In addition, Hawaiian Telcom's network is a multi-queue Quality of Service architecture with a combination of Strict Priority Queues and Weight Fair the applications running across the network.

All core network links are performance managed both on capacity growth trends and queue usage trends. This is to ensure there are no discard events with the multi-queue domains with sufficient trending analysis to trigger capacity augmentations at key metric points.

Hawaiian Telcom has a dedicated team of qualified and certified capacity planners whose full time responsibilities are to manage our network and provide relief to ensure we are meeting targeted network objectives. In-house reports are generated frequently to ensure proper visibility into traffic utilization, network and queue capacity, and trending forecasts. When trigger points are reached, appropriate network relief is initiated to reach pre-defined network baselines.

3.2.4.4.2 Offeror must describe its design objectives for transmission quality and reliability, as well as, procedures to ensure these objectives are met.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom has design objectives established for each of our service offerings for transmission quality and reliability that basically ensures a core network reliability of 99.99% and greater. Procedures include regular network assessments and monitoring and internal monthly score card reporting measured against established metrics to insure objectives are being met and maintained.

3.2.4.4.3 Offeror must describe the scalability of the proposed, telecommunication services.

Offeror shall include descriptions of their methodologies on how the proposed services address the following:

Ubiquity – Offeror's ability to provide services throughout the State.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's MPLS Ethernet services have employed industry leading technologies allowing telephone companies to bond multiple pairs of copper wire used to provide our legacy services onto a proprietary Network Interface Device (NID) presenting the customer with an Ethernet interface. Bandwidth speeds of 1.5 Mbps can be achieved depending on the distance to the Central Office (CO) gauge of the wire and resistance on the line.

A preliminary facilities inquiry is performed by Hawaiian Telcom for each location that the customer identifies prior to the sale. Hawaiian Telcom will advise the customer of the maximum bandwidth attainable using this Ethernet over Copper (EoC) bonding technique.

Other techniques, such as Ethernet over Fiber (EoF), Ethernet over Time Division Multiplexing (EoTDM), or our legacy services can be offered as alternatives if EoC is not available. Additional charges or customer requirements such as electrical grounding and additional rack space may be required.

Interoperability – the ability to deliver services that interconnect and communicate on open established standards.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's MPLS network uses industry standard Ethernet as the main interface for its services. Using Ethernet allows for the scalability between 1.5 Mbps up to 10 Gbps connections. In addition, our RNS service utilizes industry standard CSU/DSU interfaces for our Frame Relay and Private Line services and standard Ethernet for DSL access.

Scalability – the ability to increase delivery of services in number and/or size in a reasonable timeframe.

Hawaiian Telcom Response: Comply.

Customers switching to Ethernet services will enjoy the flexibility and scalability of Hawaiian Telcom's MPLS services. Unlike some legacy networks which offer only 1.5 and 45 Mbps choices, Hawaiian Telcom's Ethernet bandwidths are detailed in the table below. Hawaiian Telcom has the ability to increase delivery of services in number and/or size in a reasonable timeframe because of software and the pre-sizing of bandwidths.

Ethernet Bandwidths and Interfaces:

1.5 Mbps Ethernet RJ45
3 Mbps Ethernet RJ45
5 Mbps Ethernet RJ45
10 Mbps Ethernet RJ45
25 Mbps Fast Ethernet RJ45
50 Mbps Fast Ethernet RJ45
75 Mbps Fast Ethernet RJ45
100 Mbps Fast Ethernet RJ45
250 Mbps GigE - Fiber
500 Mbps GigE - Fiber
750 Mbps GigE - Fiber
1,000 Mbps GigE – Fiber
10 Gbps GigE – Fiber

<u>Survivability</u> – the ability to continue to operate or quickly restore services in the face of unanticipated incidents or disasters.

Hawaiian Telcom Response: Comply.

All of our Central Office network equipment is housed in Hawaiian Telcom owned and operated facilities. Back-up battery and emergency generators are available at each Central Office and monitored by our eNOC 24x7x365. In instances where catastrophic disasters occur, Hawaiian Telcom would develop contingency plans to reroute traffic around affected areas via our fiber networks to re-establish service.

Hawaiian Telcom has extensive safeguards and procedures in place to protect its network, maintain services to customers, and quickly repair any damage to its network infrastructure and facilities during failures, emergencies, manmade or natural. Operational readiness is constantly monitored, tested and refined.

Interoffice and interisland facilities are designed to be fully redundant. Synchronous Optical Network (SONET) rings automatically reroute traffic to alternate facilities if a fault is detected.

3.2.4.4.4   Offeror must describe the resiliency of the proposed telecommunication services to guarantee service level agreements in case of network outages or failures.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom has architected our next generation data network to be fully resilient and fault tolerant. At the core of the network we have full meshed logical connections with multiple diverse paths and fast reroute capabilities.

Our statewide Central Offices all have battery back-up and emergency generators to ensure communication services are uninterrupted during commercial power outages.

Hawaiian Telcom has also made significant investments in a Network Operations Center (NOC) and an Element Management System (EMS) to ensure critical network components such as Central Offices, Network Nodes, Power Plant and other network infrastructure are available and running at optimal peak performance.

Hawaiian Telcom employs 1,300+ employees that understand critical roles and have the depth of expertise to support network services. Section 2.2.1.2 details Hawaiian Telcom's response priority based on the type of trouble experienced on a customer's network.

❖ **Discussion Phase Request**

16 **Section 3.2.4.1 Industry Standards and Subsection 3.2.4.4.4**

What are your limiting factors to not being able to meet the Service Level Agreement (SLA)?

Hawaiian Telcom Response: *(reference Discussion Letter No. 1, 9/21/22, item #1)*

Under certain circumstances, Hawaiian Telcom will take exception to meeting Service Level Agreements (SLA), Service Level Objectives (SLO) and Service Level Guarantees (SLG). These circumstances include but are not limited to:

- Commercial power at the customer premise, or other location not managed by HT that terminates and/or powers Hawaiian Telcom network equipment and elements

- Inadvertent mishandling of Hawaiian Telcom equipment and/or network elements at the customer premise or other location not managed by HT, by non-Hawaiian Telcom personnel that affect the performance and/or functionality of the network equipment

- Force Majeure events including, but not limited to, natural causes (fire, storms, flooding), government or societal actions, etc., that adversely affect the availability and/or performance of the Hawaiian Telcom network

- Unplanned and unforeseen fiber cuts caused by actions outside of planned maintenance by Hawaiian Telcom

3.2.4.5 Network Security

3.2.4.5.1 The State expects the Offeror to follow stringent security standards and commit to the following:

- Security incident notification. Notify the State if a security incident leads to interruption of service or unauthorized disclosure on non-public information and detail the mitigation steps needed to reduce further risk to the State.
- Technical requirements. Implement technical requirements that are aligned with the CIS controls: https://www.cisecurity.org/contols/
- Security policies. Implement security policies that are aligned with the NIST 800-53. Based on the sensitivity of the data more stringent controls from 800-53 would be required: https://csrc.nist.gov/publications/detai;sp/800-53/rev-5/final
- Security Administration
- Physical site security

Hawaiian Telcom Response: Comply.

As the telecommunications provider to Hawaii's largest corporations and organizations, Hawaiian Telcom understands the need to ensure physical, logical, and operational levels of security of its network.

Hawaiian Telcom maintains compliance with the State of Hawaii's legal standards for cyber incident notification and reporting. In the event of a security incident that leads to interruption of services, Hawaiian Telcom will notify the appropriate State of Hawaii personnel as appropriate. Hawaiian Telcom participates in the local Hawaii State Fusion Center to share and act upon Hawaii specific threat intelligence reporting.

The Hawaiian Telcom information security team utilizes technology that is in alignment with the CIS controls, including but not limited to:

- Weekly vulnerability scanning of external facing IP addresses through CISA
- Monthly vulnerability scanning of internal assets
- Strict use of two-factor authentication for all administrator access
- 24x7 monitoring of security event log data correlated into a SIEM
- Regular patching and maintenance of perimeter firewalls & network devices
- Email and Endpoint detection and prevention tools in place for all corporate assets

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- Employee awareness training on detecting and reporting suspicious activity
- Reputation monitoring for Hawaiian Telcom domain and IP \ username information on dark web

A cross-functional executive level security council, led by the Chief Security Officer, governs the Hawaiian Telcom Security program. The corporate security policies align to NIST 800-53 standards and the executive security council reviews all cyber and physical security policies annually.

Hawaiian Telcom's network infrastructure includes its Central Office (CO) facilities, which are company owned and operated. Physical entry to CO facilities statewide is controlled via cardkey access. All access requests to company CO's are screened and approved by the Central Office Manager and controlled by Hawaiian Telcom Security. Entry into CO facilities is continuously logged and audited.

Additional physical site security management is as follows:

- Prior approval is required before access is granted to facilities.
- Access control systems are tracked.
- Some locations are monitored by cameras and alarm systems.
- Some locations are guarded by private security.
- Identification cards are required within the facility.
- Regular security checks of the facility are conducted.

❖ **Discussion Phase Request**

1. **Section 3.2.4.5 Network Security (Multi-factor Authentication)**

17

Please describe the adoption of using multi-factor authentication to protect staff accounts that may interact with State of Hawaii employees. This includes account management, customer support, and engineering.

Hawaiian Telcom Response: *(reference Discussion Letter No. 1, 9/21/22, item #2)*

Hawaiian Telcom invests heavily into our information security program to maintain the operational cybersecurity of our networks while ensuring our services do not increase cyber risk for customer subscribers. We complete annual SOC1 Type1 and SOC2 Type2 assessments by third party auditors on key service offerings to validate the secure operational processes we maintain. A summary of some of the controls in place are as follows:

- Strict use of multi-factor authentication for all administrator access
- Centralized identity management program to manage and monitor role-based user access levels across all systems
- Single-sign on technology across all localized and cloud based applications that enforces password complexity and MFA authentication
- 24x7 monitoring of undersea cable infrastructure and systems through the HT eNoc
- Weekly vulnerability scanning of external facing IP addresses through CISA
- Monthly vulnerability scanning of internal assets (including all service delivery \ production subnets)

- 24x7 monitoring of security event log data correlated into a SIEM by our SOC team
- Regular patching and maintenance of perimeter firewalls
- Email and Endpoint detection and prevention tools in place
- Employee awareness training on detecting and reporting suspicious activity
- Reputation monitoring for Hawaiian Telcom domain and IP \ username information on dark web
- Review of incident response process in team meetings
- Additional threat intelligence feeds incorporated into our SIEM

2. **Section 3.2.4.5 Network Security (Maintaining Cybersecurity Program)**

17 Please provide a recent assessment report and/or action plan to maintain your cybersecurity program and its ability to meet NIST 800-53 moderate impact controls.

Hawaiian Telcom Response: *(reference Discussion Letter No. 1, 9/21/22, item #3)*

Hawaiian Telcom is classified as a critical infrastructure provider and as such closely aligns our internal cybersecurity initiatives towards NIST 800-53 controls. We complete annual NIST 800-53 internal assessments of all network segments within Hawaiian Telcom organization and strive for year over year improvements. Each network segment within the company (8 network segments as of 9/20/22) undergoes an in-depth review led by qualified InfoSec resources with each network's primary administration team. The review consists of roughly 200 control categories each scored on a 1-5 maturity model rating and is summarized across the organization. Areas that are below target are assigned improvement objectives and re-measured bi-annually.

3.2.4.5.2 Offeror shall describe its network infrastructures, physical, logical and operation levels of security.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom adheres to industry standards with regards to securing its MPLS network, and associated entry points, including securing the command-and-control interfaces from unauthorized use. Depending upon the nature of the service, customers may be segmented off into dedicated links to avoid cross-channel eavesdropping. All Hawaiian Telcom services support additional layers of security that the customer may choose to implement to further ensure the security and privacy of their transmissions. Hawaiian Telcom leverages a wide variety of technical controls to manage the security of its various networks, including firewalls, intrusion detection/preventions systems, host-based intrusion detection, and file integrity monitoring.

Hawaiian Telcom operates a 24x7x365 network operations center (NOC) that constantly monitors the health of the network. Additionally, Hawaiian Telcom offers a Managed Network and Cyber Security service that will leverage Hawaiian Telcom's 24x7 Network and Security Operations Center (N/SOC) to monitor security elements at the customer's premises. Hawaiian Telcom leverages this 24-hour security monitoring function to monitor critical network elements within its own network, including the health of firewalls and other technical controls.

All Hawaiian Telcom personnel have undergone thorough background checks. Administrative actions to designated network elements are monitored and recorded. A vigorous change management program manages the changes being made to critical network elements during

maintenance windows. Due to the public nature of the RFP process, specific details about the placement of various security controls cannot be disclosed in this forum.

3.2.4.5.3   Offeror shall describe how its network infrastructure delivers reliable communication and how it provides data security and integrity.

Hawaiian Telcom Response: Comply.

Besides emergency generators, and full meshed logical connections with multiple diverse paths and fast reroute capabilities, Hawaiian Telcom has a fault and performance management system located in our Network Operations Center (NOC) which is manned 24X7X365. Central Offices are monitored by NOC personnel 24X7X365. Heartbeat messages and status alarms will indicate any faults in the network.

The core network that provides Internet service and other Hawaiian Telcom services is based on an MPLS ring that is fault tolerant by its very nature. Hawaiian Telcom maintains relationships with multiple peering partners over disparate links to the mainland.   Should one partner experience trouble, traffic can be dynamically moved to another partner to ensure a reliable connection. The health of our various peering uplinks is monitored by our network operations center on a 24x7 basis. Hawaiian Telcom's network supports redundancy all the way to the customer's premises, if required.

Hawaiian Telcom also fully supports various security technologies that can be layered on top of the connection to further secure the data being transmitted. VPN technologies of the customer's choosing can bolster both security and integrity of the data, ensuring that not even Hawaiian Telcom personnel can read the contents of the transmissions sent between the various entities.

3.2.4.5.4   Provide documentation of what standard controls implemented within the organization relating to services provided by the State upon request.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom completes annual assessments by 3rd party auditors to demonstrate compliance with industry best practice security standards. Every calendar year, we complete SOC 1 Types 1&2 and SOC2 Types 1&2 on many of the service offerings included in the scope of this RFP. In addition to 3rd party certification of control compliance, the following individual security controls are implemented.

- Weekly vulnerability scanning of external facing IP addresses through CISA
- Monthly vulnerability scanning of internal assets
- Strict use of two-factor authentication for all administrator access
- 24x7 monitoring of security event log data correlated into a SIEM
- Regular patching and maintenance of perimeter firewalls & network devices
- Email and Endpoint detection and prevention tools in place for all corporate assets
- Employee awareness training on detecting and reporting suspicious activity
- Reputation monitoring for Hawaiian Telcom domain and IP \ username information on dark web

3.2.4.6   Interface Requirements

3.2.4.6.1   The telecommunication services provided by Offerors must interface with existing State telecommunications systems in a transparent manner that does not negatively impact State users or the existing network infrastructure.

Hawaiian Telcom Response: Comply.

All of the services provided by Hawaiian Telcom, including legacy and next generation services are designed and built to industry standard specifications. Being the incumbent, Hawaiian Telcom can provide the State an easy migration path from their current legacy network services to our next generation network services. Our RNS service provides any-to-any connectivity with our legacy services. Customers can either choose to keep the same network interface and have us migrate the network connection to our MPLS network, or switch to next generation Ethernet services in whole.

3.2.4.6.2   Offeror shall indicate what interface requirements are needed to support the proposal telecommunication services.

Hawaiian Telcom Response: Comply.

All of the services being offered use industry standard interfaces including Ethernet RJ-45 connections, Frame Relay/Private Line CSU/DSUs, and industry standard GigE interfaces. Should the State require a non-industry standard interface, then Hawaiian Telcom will address that on a case-by-case basis.

3.2.4.6.3   In cases where network wiring is required to complete a connection, the Offeror shall provide such wiring.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom will furnish, install and maintain all wiring necessary to provide service up to the demarcation point. The demarcation point identifies where Hawaiian Telcom's facilities end and where Customer provided facilities begin. Prior to the installation of EIPDS/RNS/DIA installations, Hawaiian Telcom will visit each site and advise the customer if any additional support structures, equipment space, and power are required to provide Hawaiian Telcom a suitable environment and path to run the necessary cabling.

3.2.4.6.4   Offeror shall identify all network equipment that is not considered part of the agreement in which the State will need to provide the equipment and support.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom will for every installation, identify all network equipment that is not considered part of the agreement in which the State will need to provide the equipment and support. In general, Hawaiian Telcom will ask the State to provide:

- Environmental conditions in regards to space and temperature control
- Dedicated power

- Cross-connects, fiber/copper cabling, patch panels and conduit within the facility/building.

3.2.4.7 Offeror Responsibility

3.2.4.7.1 It is the Offeror's responsibility to provide:
- Solution architecture
- Required telecommunication services
- Installation and provisioning of the telecommunication services
- Network connectivity
- Final Testing
- Management, maintenance and support services
- Technical documentation

Hawaiian Telcom Response: Comply.

As a market leader in Hawaii, Hawaiian Telcom incorporates a superior customer experience in our offering providing an end-to-end solution. We are totally responsible for ensuring end-to-end connectivity and our authorized personnel have direct hands-on control of the solutions. Hawaiian Telcom has developed proven project management, implementation and maintenance processes that we continually evaluate and improve.

Upon implementation and acceptance, maintenance and repair is coordinated by our eCare - Customer Care, IPSS – IP Services Specialists who will work directly with our Field Technicians. Depending on the type of network service, customers will contact eCare or IPSS. A detailed matrix of network services and the groups that support the different services is provided under Section 3.2.8.1.3.

Added to the management, maintenance and support of a network is optional Managed Services that provide proactive maintenance and monitoring of circuits. Qualified Managed Services Technicians work with our Network Operations Center and our Field Technicians. Managed Services is the customer advocate moving the trouble ticket through the different support groups so the customer does not have to do so.

3.2.5 Network Performance & Service Levels

3.2.5.1 Circuit Parameters

3.2.5.1.1 Offeror shall describe its service level commitments for Annual Network Availability

Hawaiian Telcom Response: Comply.

Hawaiian Telcom meets or exceeds 99.99% Annual Core Network Availability.

Exceptions include service interruptions caused by Hawaiian Telcom planned network maintenance activities, maintenance at the customer premises and failure of Customer premises hardware.

3.2.5.1.2 Offeror shall provide equal or better Annual Network Availability than 99.99% (Percentage of time that the service is operational).

Hawaiian Telcom Response: Comply.

As stated in item 3.2.5.1.1, Hawaiian Telcom meets or exceeds 99.99% Annual Core Network Availability.

Exceptions include service interruptions caused by Hawaiian Telcom planned network maintenance activities, maintenance at the customer premises, and failure of Customer premises hardware.

3.2.6   Terms

3.2.6.1   Multiple Terms

3.2.6.1.1   Services shall be available with multiple terms of 1 year, 3 year and 5-year terms.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom will offer 1-, 3- & 5-year terms on our services.

3.2.6.1.2   Larger discounts should be applied to longer term.

Hawaiian Telcom Response: Comply.

Longer terms will have larger discounts.

3.2.7   Billing

3.2.7.1   Start of Billing

3.2.7.1.1   Billing of all ~~circuits~~ services must not begin until the ~~circuit~~ service has been declared operational by the customer. *[Revised per RFP Addendum 2, dated 6/03/2022]*

Hawaiian Telcom Response: Comply.

Billing of all services will not begin until the service(s) is accepted by the customer.

3.2.7.2.2   The billing period must be from the first of the month to the end of the month or a mutually agreeable period.

Hawaiian Telcom Response: Comply.

3.2.7.2.3   Billing for all services must be on a monthly basis with bills rendered within 15 days after the end of the billing period.

Hawaiian Telcom Response: Comply.

3.2.7.2.4   The Offeror shall prepare monthly invoices in two (2) copies for each billing account.

Hawaiian Telcom Response: Comply.

3.2.7.2.5   All monthly invoices must at a minimum identify the customer being billed, billing address, billing phone number, billing account number, billing circuit number, the type of service being billed, regulatory taxes/fees/charges, and the amount billed.

Hawaiian Telcom Response: Comply.

All monthly invoices will have the billing address, billing phone number, if the account has a phone number, or circuit number if the account is a circuit. The invoice will include a description of the network service and the monthly charge. The invoice will also include regulated taxes, fees and surcharges. Finally, the invoice will summarize the total amount billed.

3.2.7.2.6   Invoices shall be simple in format and easy for the customer to understand. If the Offeror uses company or industry specific wording (for example Universal Service Order Codes) on invoices, the Offeror shall provide definitions of the entries either on the monthly detailed invoice or on a separate document that defines the entries. Also, the use of codes in place of product descriptions will not be acceptable.

Hawaiian Telcom Response: Comply.

3.2.7.3 Late Payment Charge

3.2.7.3.1 Contractors are reminded that the State, from the date of receipt of an invoice (not the date billed or mailed), has 30 calendar days to process and pay the bill without a late charge by State law (Hawaii Revised Statutes 1093.10). The Contractor must not send out late payment letters or assess late charges until 30 days has passed.

Hawaiian Telcom Response: Comply.

3.2.7.4   Education Discount

3.2.7.4.1   The Offeror shall participate in the FCC E-Rate discount program for schools and libraries.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom participates in the FCC e-Rate discount program for schools and libraries. Hawaiian Telcom has a full-time employee who is the administrator for the e-Rate program to ensure e-Rate compliance.

3.2.7.4.2   It is anticipated that some services obtained under this procurement may be eligible for E-Rate discounts which the Hawaii Department of Education (DOE) intends to apply for. Under the program, providers receive the full amount they contract for, however payment for eligible goods and services is split between the DOE and the Universal Service Funds (USF).

The Offeror shall refer to the Eligible Services List (FCC Docket No. 13-184 – please ensure to view the appropriate funding year) which can be viewed on the website at www.usac.org/e-rate/. Offeror is responsible for ensuring that all submissions are on the Eligible Services List, or it not, are so noted and priced separately.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can indicate perceived eligibility of each proposed service based on the Eligible Services List but will not guarantee such eligibility.

USAC ultimately determines eligibility/ineligibility at the time of funding application. Eligibility can vary depending on the use to which a service is applied.

3.2.7.4.3   Any Offeror wishing to provide E-Rate qualifying services to the DOE shall:

- Possess a Service Provider Identification Number and provide it with the bid proposal. Contact the USAC for additional information.

  Hawaiian Telcom Response: Comply.
  Hawaiian Telcom's Service Provider Identification Number is 143002709.

- Agree that the DOE's portion of the contract is subject to availability of the discount to the DOE schools on a year-by-year basis.

  Hawaiian Telcom Response: Comply.

- Agree to invoice for the discount amount using the approved USAC guidelines, forms and procedures.

  Hawaiian Telcom Response: Comply.

- Agree to invoice the DOE for the after-discount amount.

  Hawaiian Telcom Response: Comply.
  Discounts will normally be applied at time of billing, however due to order timing or other causes, it is possible that a discount will not be applied. In such cases, a discount credit will be issued within two bill cycles. In the event that services bill before funding is approved by USAC, HT will bill for the full amount and DoE is expected to pay the full amount. Once funding is committed, discount credits will be issued.

  Should there be insufficient committed funding to cover the entire funding year, Hawaiian Telcom reserves the right to discontinue discounts and DoE will be liable for undiscounted charges in full.

- Agree to assist the DOE in resolving any administrative issues that arise from the USF program.

  Hawaiian Telcom Response: Comply.

The Department of Education normally retains and has available Hawaiian Telcom invoices to provide to USAC if requested. Otherwise, Hawaiian Telcom can assist in providing invoice copies.

- Agree that the order may be cancelled, at the DOE's option, if the DOE does not receive the anticipated discounts.

Hawaiian Telcom Response: Comply.

DOE orders can be canceled by the DOE without incurring non-recurring or minimum monthly recurring charges as long as service has not been provisioned and/or a Technician has not been dispatched. Non-recurring charges and minimum monthly recurring charges vary by type of network service.

Hawaiian Telcom is of the understanding that schools and libraries do not process orders with Hawaiian Telcom until they receive the E-rate discount approval for the desired service.

- Not assess additional surcharge related to E-Rate processing for non-DOE agencies.

Hawaiian Telcom Response: Comply.
Hawaiian Telcom does not assess additional surcharges related to e-Rate processing for non-DOE agencies.

3.2.8 Customer Service

3.2.8.1 Network Support

3.2.8.1.1 Offeror must have a full-time network operations center, preferably in the State of Hawaii, who are ready to take trouble and technical assistance phone calls 24 hours a day, 7 days a week, as the State has workers on shifts, flex time, and overtime who may report a problem. Prompt response to problems is required.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom offers free telephone and online support, backed by its enhanced Network Operations Center (eNOC) that is located in downtown Honolulu, operating on a 24/7x365 basis. Our eNOC is staffed with full-time certified engineers and technicians.

❖ **Initial Repair Call – All Network Services**: **808-643-4474**

One state-wide toll free number, **808-643-4474**, has been established especially for the State of Hawaii to report initial trouble for all Network Services (see Table 1). This is the preferred method as this will ensure that the trouble call is properly documented and will allow Hawaiian Telcom the ability to track history should there be a situation of continuing and/or intermittent problem on a line or circuit.

Because of multiple network services and the different expertise of technical support needed, the statewide toll-free number **808-643-4474** is front-ended with an auto attendant feature. When reporting trouble, the customer will be asked to provide the following:

- Government Agency/Department, service address, customer account number
- Reported by: name and telephone number of the person reporting the trouble
- On-site contact (if different from above): name, telephone number and access hours
- Circuit identification number or network telephone number
- Detailed description of the problem, date and time of trouble occurrence

The Repair Representative will provide a **trouble ticket number** and a **commitment time** on when the repair activity should be completed. For status on an existing trouble ticket, the customer should contact the state-wide toll-free number and provide the trouble ticket number or circuit identification number.

❖ <u>**Initial Repair Call – Managed Services & Other Advanced Services**</u>: **808-643-3667**

For Managed Services and other Advanced Services, State government customers may report trouble by calling **808-643-3667**.

The trouble reporting process is the same and similar information will be obtained from the customer.

Internally, all trouble tickets for the State are monitored by the Customer Care department. If a missed commitment is discovered, the ticket will be proactively handled as follows.

➢ A Customer Care Support Agent will contact the Dispatch Resource Center to locate the status of the repair ticket.

➢ The dispatcher will immediately dispatch an available qualified technician or will contact the area Local Manager to escalate.

➢ If necessary, the Local Manager will work with the Supervisor-- Business Customer Care or with the Senior Manager--Service Quality & Project Coordinator (hereafter referred to as the "SM-SQPC").

For outages that involve several departments and a commitment is missed, the SM-SQPC will pull resources from the network, outside plant cable, and telephone equipment departments. The SM-SQPC will follow the outage to resolution.

Repair Services	Telephone Numbers
All Network Services, including, but not limited to: • Frame Relay • ATM • Point to Point Dedicated Line • ISDN PRI • Dedicated Ethernet Services • POTS • Business High Speed Internet • Ethernet Broadband Layer 2 (Enhance IP Data Service) and Layer 3 (Routed Network Service) • Point to Multipoint Switched Ethernet • Dedicated Internet Access • VoIP (Business All In One)	808-643-4474
Managed Service and Other Advanced Services	808-643-3667 or managed.services@hawaiiantel.com

Table 1: Repair Contacts List

Hawaiian Telcom will provide prompt response to reported problems. Please be assured that we are committed to serving you and will work with you to resolve any trouble reports as quickly as possible.

3.2.8.1.2 Identify other problem reporting methods such as email submissions.

Hawaiian Telcom Response: Comply.

An alternate method for opening a repair case for Managed Services / Other Advanced Services is via email: **managed.services@hawaiiantel.com**.

In addition, Hawaiian Telcom has a business portal for trouble reporting on its website at: **https://www.hawaiiantel.com/business/Business/Customer-Support/Contact-Our-Team/Submit-Support-Ticket**

3.2.8.1.3 Identify problem escalation process.

Hawaiian Telcom Response: Comply.

If a commitment is missed and not proactively escalated, the State may directly contact the SM-SQPC (1st escalation). At a higher escalation, the VP – Customer Operations (or equivalent department leader at that time) may be contacted. See Table 2.

As each case is unique, Hawaiian Telcom will work with the Company and the State to identify and resolve the issue.

Escalation Contact	Name / Email	Level	Telephone Number
Senior Manager, Service Quality and Project Coordinator (SM-SQPC)	Glenn Kobashigawa glenn.kobashigawa@hawaiiantel.com	1st escalation	808-778-1027
Vice President, Customer Operations	Ben Morgan ben.morgan@hawaiiantel.com	2nd escalation	808-778-2424

Table 2: Escalation Contacts List

Offeror shall outline its problem escalation process beyond Tier I support.

Hawaiian Telcom Response: Comply.
If trouble resolution and progress is not being made in a satisfactory manner beyond Tier 1 support, the State may escalate the case to the individuals listed in Table 2. These resources will escalate internally and help manage the open items or issues to full resolution.

Offeror must describe the escalation procedure available to the State in the event the State deems progress on problem resolution to be unsatisfactory.

Hawaiian Telcom Response: Comply.
The Account team is the Customer's ultimate advocate and may be contacted at any time during the escalation process. See Table 3.

Sales Contacts		
HATS Program Manager	Keith Heininger keith.heininger@hawaiiantel.com	808-375-5107
Government Account Manager (GAM)	Your Respective GAM or Alison Shimabukuro alison.shimabukuro@hawaiiantel.com	808-782-5979
Director, Business Sales - Government	Brandon Onishi brandon.onishi@hawaiiantel.com	808-265-9193

Table 3: Sales Contacts List

3.2.8.1.4   Monitoring and Reporting

3.2.8.1.4.1   Network Operations Center (NOC)

Offeror shall describe how its NOC will provide technical assistance and 24x7 network monitoring.

Hawaiian Telcom Response: Comply.

> Hawaiian Telcom's enhanced Network Operation Center (eNOC) is located in downtown Honolulu and provides 24x7x365 support based on services provided in multi-layer functions.
>
> Staffed with local engineers and highly certified specialists, the eNOC provides 24x7x365 network monitoring of all Hawaiian Telcom core network equipment via an alert aggregation system. Specialists with expertise in the various technologies proactively monitor these alerts.
>
> Analysts who are trained in first-line isolation and customer support provide technical support to customers who call in trouble to the eNOC. Issues that cannot be resolved by the Analysts are escalated to the appropriate Specialists and Tier 2 Engineers or dispatched to field technicians.
>
> For customers who purchased Managed Services, dedicated Managed Services Specialists coordinate troubleshooting end-to-end between customer technical staff and appropriate Hawaiian Telcom personnel, escalating when necessary.

Offeror shall provide toll-free telephone and email access to the NOC 24x7.

Hawaiian Telcom Response: Comply.

Trouble reporting via one state-wide toll free number to report initial trouble for all network services, including access to the NOC 24x7 is: 808-643-3667.

Phone support is necessary. Online trouble ticket creation and monitoring is desired, but not required.

Hawaiian Telcom Response: Comply.

Contact numbers are available based on services provided. Please see Section 3.2.8.1.3 for ticket creation phone support.

3.2.8.1.4.2   Offeror shall take immediate corrective action to resolve any network failure, such as rerouting traffic, utilizing a redundant facility, dispatching technicians, and all other steps required for the immediate re-instituting of services to the State.

Hawaiian Telcom Response: Comply.

All restoration activities are performed in line with PUC and FCC guidelines.

3.2.8.1.4.3   For individual trouble reports, a verbal report of trouble clearance with the report number shall be furnished within one (1) hour to the customer that reported the trouble.

Hawaiian Telcom Response: Comply.

Once trouble is reported, a report number is given to the customer. Trouble is isolated, and after remote troubleshooting, a technician is dispatched if necessary. Hawaiian Telcom's policy is the Technician who clears the trouble will give the customer a verbal report of the trouble clearance. If the trouble is cleared without dispatching a Technician, a verbal report of trouble clearance can be furnished to the customer if requested. A notation will be made on the trouble ticket to contact the customer when the trouble is cleared.

3.2.8.1.4.4 Web Portal. Offeror shall optionally provide web portal access that allows for network monitoring, real time traffic analysis, and reporting functionality with a minimum of twelve (12) months' worth of historical data.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's Managed Services offerings, specifically, Network Connectivity Management and any level of Managed Network and Cyber Security Services on WAN edge devices, offer web portal access that provides real-time statistics, including availability and bandwidth utilization. The portal contains 12 months of historical data that is available to the customer.

3.2.8.2 **Management Reports**

3.2.8.2.1 Contractor shall provide annual reports to the Contract Administrator (preferably at the end of the calendar year or beginning twelve (12) months from the Contract Start Date), which summarized the circuit type, Department, Location, Speed, and Cost. One report will be a consolidated report for the State and the other reports will be by department or agency.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can provide an annual report/extract to the Contract Administrator which summarized the circuit type, department, location, speed, and cost. A fee is associated with the preparation of an extract.

3.2.8.2.2 After giving forty-five (45) days' notice, the Contract Administrator may request the Contractor to provide a list of State customers, account numbers, billing addresses, and circuits on each account. It is desirable that the Contractor be able to provide the physical address where service is provided to each account.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can provide a list of State customers with account numbers, billing addresses and circuit numbers. An extract will be prepared based on billing codes and customer names. A fee is associated with the preparation of an extract.

3.2.8.2.3 Offeror shall identify and include samples of all available management reports regarding billing analysis, traffic studies, and usage.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can provide billing data for analysis and traffic studies on services that go through our public switched network. Alternatively, studies on network (bandwidth) that carry customer data can be monitored and managed through our managed services offering.

Following Section Two Technical Requirements, a sample of a bill extract and managed services report are provided. A typical billing extract report will contain data such as, customer name, billing name, billing address, customer account number, service type, service address, product description, quantity and billing of service amount.

3.2.8.2.4   For any major outage (4 hours or more), Contractor shall provide an after-action report that identifies the problem and corrective action taken.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can provide RFO (Reason for Outage) reports upon request for any major outage (4 hours or more)

3.2.8.2.5   Contractor shall provide service availability metrics upon request by the agency.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom can provide service availability metrics when requested

3.2.8.3 Circuit Downtime

3.2.8.3.1   Contractor shall provide a credit for circuit outages and problems with transmission quality that affects connectivity.

Hawaiian Telcom Response: Comply.

Outage credits are on a pro-rated basis based on the actual number of days in the month.

For example, if the outage is for a total of five days, and there are 30 days in a month, the monthly recurring charge will be divided by 30 and multiplied by 5 to determine the exact amount of credit for the outage. If there are contract terms that deviate from this, then the contract terms will prevail.

3.2.8.3.2   Offer shall explain how it will handle credits

Hawaiian Telcom Response: Comply.

Credit vouchers for Hawaiian Telcom caused out of service adjustments are processed through the UCC (Unified Contact Center). When trouble is reported, an automated ticket is prepared and an out of service indicator is checked. When a technician is dispatched, and the trouble is cleared, the technician must close the ticket confirming the out of service to receive a billing credit. A report of out-of-service tickets is uploaded to Hawaiian Telcom Billing.

Billing will process credits for out of service.

3.2.9   Implementation/Migration Plan

3.2.9.1   Upon request, the Contractor shall submit an Implementation/Migration Plan that describes the major task, personnel proposed to perform each task, estimated hours to perform each task, costs, and a schedule for any purchased services.

Hawaiian Telcom Response: Comply.

Legacy services defined as Frame Relay, DSL and Point-to-Point Dedicated Line follow standard implementation procedures. Hawaiian Telcom follows a proven service order processing path that flows from provisioning to installation for legacy services.

Hawaiian Telcom has developed end-to-end standard procedures to implement all of our MPLS networks. MPLS network services are EIPDS, RNS, DIA and Business-All-in-One. MPLS network installs require additional layers of coordination to include facility checks for Ethernet services and provisioning by our IP Specialists. Customized implementation/migration plans for MPLS networks will be developed upon request.

Following is an example of the preparation and planning for MPLS services:

1) Hawaiian Telcom Account Manager & Sales Engineer(s) - Product Presentation. Hawaiian Telcom will present product overviews, interview customers, develop and propose a network design and pricing for any individual State department that expresses interest. This process will give the customer the necessary information required to make a decision on which Hawaiian Telcom network is best suited to their needs. These presentations can take place at the customer's offices, or via conference call/Webex sessions for the Neighbor Islands.

2) Facilities Inquiry Check (Sales Engineer) - The facilities inquiry check is a free service and will require that the customer provide Hawaiian Telcom street addresses and working Hawaiian Telcom telephone numbers. We will use that information to determine if we can provide Ethernet services to each location and if any additional costs will be required.

3) OSP Site Check (Access Planning, Network & Field Operations) - The OSP (Outside Plant) site check is a free service where a Hawaiian Telcom OSP engineer will visit each site. The engineer will work with the customer to identify adequate support structures, conduits, adequate rack space and power and advise the customer of any additional work or responsibilities needed from them required for installation of their network.

4) The Planning Session (Account Manager, Sales Engineer, Project Manager, Network & Field Operations & Access Planning) - The planning session is a Hawaiian Telcom internal meeting of all of the departments that are involved in the planning/implementation of the circuit. The planning session will determine the milestone & delivery dates of the circuits. From this point, a Hawaiian Telcom Network Project Manager (PM) will be assigned to take over the monitoring of the project and update the customer with frequent status updates.

5) The Network PM will be responsible for submitting to the customer an implementation plan which describes major tasks and milestone dates. The PM is responsible for coordination of the plan and the duties below:
   a. Order confirmation from Sales/Business Office
   b. Project worksheet for all sites to include:
      i. Service Address
      ii. Point of Contact (POC)
      iii. Plant Test Date (PTD)/Due Date (DD)
      iv. Circuit Identification (ID)
      v. IP Address(es) as appropriate
      vi. Customer Support Structure Requirements, as appropriate

   c. Tracks milestone dates

   d. Updates customer as appropriate

   e. Resolves/Escalate known jeopardies

   f. Coordinates hand-off between customer and IPSG – ensure connectivity of circuit

   g. Provides to customer – Bandwidth test results

   h. Send customer final worksheet and close project

3.2.9.2   The Contractor shall identify potential risks associated with implementation/migration and recommend strategies for managing those risks.

Hawaiian Telcom Response: Comply.

The Project Manager will be responsible to identify potential risks associated with implementation/migration and recommend strategies for managing those risks.

3.2.9.3   It is essential that there be a seamless migration of services to a new service or Contractor.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom recommends parallel service for a seamless migration for services. Customers may request after hour cutover and migration. Customer paid overtime will be quoted. Upon completion of successful migration to the new service, customer will be asked to contact Hawaiian Telcom to disconnect any legacy TDM services.

Being the incumbent, Hawaiian Telcom can provide the State an easy migration path from their current legacy network services to our next generation network services. Our RNS service provides any-to-any connectivity with our legacy services – customers can either choose to keep the same network interface and have us migrate the network connection to our MPLS network, or switch to next generation Ethernet services in whole.

3.2.9.4   The implementation/Migration Plan will be reviewed by the requesting Department prior to starting installation.

Hawaiian Telcom Response: Comply.

On large projects with multiple locations, the Account Manager and the Network Sales Engineer will provide an implementation/migration plan to the Department for review. Hawaiian Telcom will ask the State Department to designate a member that will be the Department focal on the coordination team.

A handoff will be made to the Hawaiian Telcom Project Manager (PM) by the Account Manager and the Network Sales Engineer. The PM will be the overall coordinator updating, escalating and providing resolution for all team members to include the State Department focal.

On implementation/migration of smaller (example single locations) the PM will provide a worksheet with an implementation/migration plan after gathering information from the Customer, Account Manager, Network Sales Engineer, and others involved in the migration plan.

Prior to the start of the installation/project the PM will submit the implementation/migration plan to the Department for review.

3.2.10   Acceptance Testing

3.2.10.1   After completion of any portion of the system, the Contractor shall conduct acceptance tests for performance reliability. The Contractor shall provide all test equipment and accessories required to perform tests and to record test results. The Contractor must ensure that all associated costs (e.g. travel), for the participation at all acceptance testing, are included within its total proposal cost. The Contractor shall notify the State prior to conducting any testing. The State reserves the right to witness any or all testing. If, during the conduct of testing, test items fail to meet performance requirements, the Contractor shall correct the deficiencies and repeat testing of all affected items. The Contractor shall submit the Acceptance Test Reports to the requesting Department showing the Contractor's functional specifications and the test results.

Hawaiian Telcom Response: Comply.

Hawaiian Telcom will provide all test equipment and accessories required to perform tests and record test results. Hawaiian Telcom corrects all deficiencies and repeats testing until objectives are met.

Hawaiian Telcom follows RFC 2544 testing parameters for testing broadband layer 2 and 3 services. The tests include throughput, frame loss and latency. We utilize RCF 2544 pre-defined frame sizes to simulate traffic conditions. Testing is accomplished using test sets. Hawaiian Telcom utilizes JDSU HST 3000 and QT 600 test equipment and accompanying software.

Although Hawaiian Telcom tests all services before turning it over to the customer, test results are often not captured in writing. Therefore, customer must advise Hawaiian Telcom prior to installation if a test report is desired.

There is no requirement specified for tariffed legacy circuits. Hawaiian Telcom utilizes test sets that can furnish test data, however, to capture test results would be a manual effort. Though there is no documentation, our standard is a customer may witness the test prior to handing over the circuit.

3.2.10.2   Acceptance of the system shall be granted after all items have passed the acceptance tests and has been approved by the requesting Department.

Hawaiian Telcom Response: Comply.

3.2.11   Transition Periods

3.2.11.1   Transition at Beginning of Contract

The Contractor shall work with the existing telecommunications provider to ensure a seamless transition at no cost to the State.

Hawaiian Telcom Response: Comply.

3.2.11.2   Transition at End of Contract

Monthly cost to continue existing service will be at the current rate of the existing agreement or better on a month-to-month basis, but not to exceed 12 months or there is a cancellation of service or a new multi-year agreement is executed.

Hawaiian Telcom Response: Comply.

3.2.12   Other Charges

3.2.12.1   There will be no service charge to the State for changing service types or increasing bandwidth speed when the monthly cost of the new service is equal to or higher than the existing service and the contractor does not change. For example, moving from lower cost Frame Relay to more costly Broadband Ethernet or moving from 10Mbps Broadband Ethernet to 25Mbps Broadband Ethernet. This shall also apply to circuits procured prior to the start of this contract.

Hawaiian Telcom Response: Comply.

3.2.12.2   Cancellation of Service

There will be no charge to the State for the cancellation of service due to the completion of a term/agreement.

Hawaiian Telcom Response: Comply.

3.2.12.3   Early Termination Fees

3.2.12.3.1   There will be no early termination fees for one (1) hear agreements.

Hawaiian Telcom Response: Comply.

There will be no early termination fees for one (1) year agreements.

3.2.12.3.2   Three (3) and five (5) year agreements will have a termination fee equal to 25% of the remaining balance of the existing agreement.

Hawaiian Telcom Response: Comply.

Three (3) and five (5) year agreements will have a termination fee equal to 25% or less of the remaining balance on the existing agreement.

Point-to-Point Dedicated Lines, ISDN PRI, and DID service will not incur early termination charges. Reference P.U.C. Tariff 20, Section 1, 1.29.7.

3.2.12.3.3   Offeror shall provide the termination fee percentage for both three (3) and five (5) year agreements.

Hawaiian Telcom Response: Comply.

3.2.12.3.4   There will be no early termination fees if the Contractor does not meet the Annual Network Availability requirements in Section 3.2.4.1. Circuit Parameters.

Hawaiian Telcom Response: Comply.

3.2.12.4   Any new regulatory fees, regulatory charges, and taxes or any changes (increases and decreases) to these during the contract period or extensions, shall be submitted with an explanation to the Contract Administrator, at least fifteen (15) days prior to the effective date. If the Contractor fails to provide fifteen (15) days' notice prior to the effective date for billing, the Contractor shall not bill for the item until the 15-day period has elapsed.

Hawaiian Telcom Response: Comply.

3.2.12.5   Late submittals will be allowed if it can be shown that the agency granting the change does not announce the change more than thirty (30) days prior to the effective date. If a tax, fee, or charge changes regularly, the Contractor and the Contract Administrator may agree to streamline the process and reduce the fifteen (15) day notice period on a case-by-case basis.

Hawaiian Telcom Response: Comply.

3.2.12.6   ~~Non-recurring costs to provide services (such as cabling, infrastructure, labor costs, etc.) shall not exceed actual cost.~~ *[Per RFP Addendum 2, dated 6/03/2022, this item is removed.]*

IV. EXECUTIVE SUMMARY

[Ref. RFP Section 4.5.4, pg. 30]

Executive Summary. *The executive summary [not to exceed one (1) page] is to briefly describe the Offeror's Proposal. This summary should highlight the major features of the Proposal. The response should demonstrate the Offeror's understanding of and ability to meet the Administrative and Technical Requirements of the RFP. The State should be able to determine the essence of the Proposal by reading the executive summary. This summary will not be evaluated for points, but rather is a high-level explanation of the entire proposal.* *Offeror may include an attachment of exceptions to their executive summary page. Any exception taken to parts of this RFP, including the general provisions, or the Attorney General's (AG) general conditions shall be submitted with the proposal as a condition to the Offerors proposal, which may negatively affect the evaluation of the Offeror's proposal or result in the non-consideration of their proposal. Offeror shall identify the page number and section(s) being addressed by the exception and provide written justification for the request. The State reserves the right to reject any exceptions listed.* **[Revised per RFP Addendum 2, dated 6/03/2022.]**

Hawaiian Telcom Response: Comply.

See next page for our Executive Summary.

Executive Summary

Hawaiian Telcom is pleased to present its response to Request for Proposal RFP No. 2200 -- **Furnish, Deliver, Install and Manage Network and Telecommunications Services**.

Experience in Hawaii

As the premier IT services company in Hawaii and Incumbent Local Exchange Provider (ILEC), we have over 135 years of networking and telecommunications experience and have evolved to become *Hawaii's Technology Leader*. In selecting a partner to embark on a long-term endeavor, a trusted partner who not only has the experience, but understands the unique business and cultural landscape in Hawaii is paramount to the success of this engagement.

Throughout the past 25 years, Hawaiian Telcom has supported the State of Hawaii, servicing all departments, agencies and county jurisdictions with the core services outlined in this bid request. We are one of the primary providers on the current State Procurement Price List #12-12 and have aided the State in modernizing its network and telecommunications infrastructure. We live and work in this community. Our experience, relationships, and foresight put us in a unique position to serve the State's communications and IT needs well.

Our Network

Hawaiian Telcom has a long history of delivering the most advanced network in the state. Over the past 10 years, we has invested over half a billion dollars in Hawaii's network. This year alone, with the launch of **Hawaiian Telcom Fioptics**, we will enable over 50,000 additional locations throughout the State. Unlike other providers who use a mix of fiber optic and coaxial (copper-core) cables, **Hawaiian Telcom Fioptics** is the only 100% fiber based service in Hawaii providing the most advanced and highly available network available. Supported by an expansive network of 200,000+ strand-miles of fiber optic cables, our network is strategically engineered to provide optimum network availability and diversity. As an added layer of protection, our intelligent network core is full-meshed with self-healing characteristics to ensure your services are available when you need them.

Support Capabilities

Today's network supports an every-increasing amount of mission critical services including emergency response systems, healthcare and public health services, and transportation systems. Disasters will strike and when it does, you'll need a trusted partner to support you. Here are highlights of our support program:

- A State-of-the-Art Network Operations Center (NOC) facility located in the heart of downtown Honolulu
- HT's network monitored 24x7x365 to proactively detect, repair faults, and address performance anomalies.
- Vendor certified engineers and technicians, available on every island throughout the state, 24x7x365 basis
- A robust support program, led by a Service Quality Manager, dedicated to the State of Hawaii
- Decades of experience with the State, with intimate knowledge of its networks, systems, processes and personnel
- Managed Services offers the State multiple levels of network services and security, which can address many of the State's concerns about intrusion, viruses and network performance.

Future of Hawaii

We believe investing in fiber and technology go hand-in-hand. Hawaiian Telcom continues to make significant investment in our network even outside of Hawaii as demonstrated by our investment in the landmark SEA-US undersea fiber cable system. In addition to securing multi-terabits of bandwidth capacity through this program, we now offer access to cloud interconnects at lower price points, as well as various cloud services such as hybrid, managed security and disaster recovery solutions – solutions included in our bid response.

We are constantly seeking ways to innovate with technology. Our goal is to empower the State and our communities through advanced solutions such as secured, fiber-based Internet services and Cloud and Cyber Security offerings. We aim to drive innovation, mitigate risk and leverage intelligence to streamline operations and improve government efficiency, transparency and responsiveness. By combining our substantial state-wide presence, our local experience, long-standing commitment to Hawaii, and the engineering breadth and expertise, Hawaiian Telcom offers a best-of-breed solution and are committed to your ongoing success today and into the future.

IV(a) BID EXCEPTIONS

[Ref. RFP Addendum 2, Change #4]

Replace Item No. ***4 Executive Summary*** *under Section* ***4.5 Required Format and Content*** *as follows:*

The executive summary [not to exceed one (1) page] is to briefly describe the Offeror's Proposal. This summary should highlight the major features of the Proposal. The response should demonstrate the Offeror's understanding of and ability to meet the Administrative and Technical Requirements of the RFP. The State should be able to determine the essence of the Proposal by reading the executive summary. This summary will not be evaluated for points, but rather is a high-level explanation of the entire proposal. Offeror may include an attachment of exceptions to their executive summary page. Any exception taken to parts of this RFP, including the general provisions, or the Attorney General's (AG) general conditions shall be submitted with the proposal as a condition to the Offerors proposal, which may negatively affect the evaluation of the Offeror's proposal or result in the non-consideration of their proposal. Offeror shall identify the page number and section(s) being addressed by the exception and provide written justification for the request. The State reserves the right to reject any exceptions listed.

[Ref. RFP Addendum 2, Q&A - Answer #A11]

A11: The State of Hawaii will consider "Exception" responses on Attachment 8, Offer Form, OF-6 Schedule D – Technical Requirements. Refer to Section 3.2 Technical Requirements. Also, an Offeror may include an attachment of exceptions to their Executive Summary page per this addendum. (See RFP Change No. 4 above).

Hawaiian Telcom Response: Comply.

Hawaiian Telcom's only exception is for RFP Section 3.2.1.1.2 regarding encryption services as part of VPN service, but alternative options are presented.

See Section 3.2.1.1.2 on page 2 of Offer Form OF-6, Schedule D.