

AMENDMENT NUMBER ONE  
TO  
CONTRACT MA-060-23010871  
BETWEEN THE  
COUNTY OF ORANGE  
AND  
AVIAT U.S., INC.

This AMENDMENT NUMBER ONE to Contract number MA-060-23010871 (hereinafter “AMENDMENT NUMBER ONE”) between the County of Orange, a political subdivision of the State of California, through its Sheriff-Coroner Department (hereinafter “COUNTY”) and Aviat U.S., Inc., (hereinafter “CONTRACTOR”) with a business address of 200 Parker Dr., Suite C100A, Austin, TX 78728, is made and entered upon execution of all necessary signatures.

RECITALS

WHEREAS, the State of Washington has issued a Cooperative Purchasing Master Price Agreement as Contract No. 00318, through NASPO ValuePoint for Public Safety Communications Products and Solutions now in effect from July 1, 2021, through and including December 31, 2026, renewable for twenty-four (24) months, included in Attachment C; and

WHEREAS, the State of California has issued Participating Addendum No. 7-22-70-49-02 on behalf of all California political subdivisions/local governments to purchase Computer Equipment (Servers and Storage) pursuant to NASPO ValuePoint Contract No. 00318, included in Attachment D; and

WHEREAS, COUNTY and CONTRACTOR executed a Contract pursuant to the NASPO contract for Public Safety Communications Products and Solutions on April 11, 2023, (hereinafter “ORIGINAL CONTRACT”), for the term of April 11, 2023 through and including April 10, 2033; and

WHEREAS, COUNTY desires to modify Attachment A, Scope of Work, Section 8. General Provisions, of the ORIGINAL CONTRACT to remove line number 8.2 and the CONTRACTOR has agreed to provide those services at the rates set forth in the ORIGINAL CONTRACT;

NOW THEREFORE, in consideration of the mutual obligations set forth herein, both COUNTY and CONTRACTOR agree as follows:

1. ARTICLES

a. Attachment A, Scope of Work, Section 8, General Provisions, of the ORIGINAL CONTRACT is amended in its entirety to read as follows:

8. General Provisions

8.1 Contractor shall be responsible for all costs of shipping, storage, and other transportation required for all equipment to be installed.

- 8.2 Intentionally Left Blank.
  - 8.3 Warranty for equipment will commence upon completion of acceptance testing or beneficial use, whichever occurs first and shall continue for the whole duration of this MUA. After the MUA expires, standard warranty for RF equipment should apply.
  - 8.4 Contractor shall not make any exceptions to the standard warranty a part of the purchase contract due to any noted condition of any facility involved in the project.
  - 8.5 Space for standard 19-inch mounting racks within the shelter will be provided. Racks shall be provided and installed by Contractor. Mounting space will be near, but not necessarily adjacent to, the current mounting locations of the microwave equipment. County will make every effort to provide adjacent mounting space, wherever possible.
2. All other terms and conditions in this Contract shall remain unchanged and with full force and effect.

-Signature Page Follows-

IN WITNESS WHERE OF, the Parties have executed AMENDMENT NUMBER ONE to Contract number MA-060-23010871.

\*Contractor: Aviat U.S., Inc.

By: Pete Smith Title: President & CEO  
DocuSigned by: 2AC1201C7F914E8...

Print Name: Pete Smith Date: 05-Jun-24

\*Contractor: Aviat U.S., Inc.

By: [Signature] Title: General Counsel/VP Legal Affairs/Secretary  
DocuSigned by: 04E09C136D45405...

Print Name: Erin Boase Date: 05-Jun-24

*\*If the contracting party is a corporation, (2) two signatures are required: (1) signature by the Chairman of the Board, the President or any Vice President; and one (1) signature by the Secretary, any Assistant Secretary, the Chief Financial Officer or any Assistant Treasurer.*

*The signature of one person alone is sufficient to bind a corporation, as long as he or she holds corporate offices in each of the two categories described above. For County purposes, proof of such dual office holding will be satisfied by having the individual sign the instrument twice, each time indicating his or her office that qualifies under the above-described provision.*

*In the alternative, a single corporate signature is acceptable when accompanied by a corporate resolution demonstrating the legal authority of the signature to bind the company.*

County Of Orange

A political subdivision of the State of California



Sheriff-Coroner Department

By: \_\_\_\_\_ Title: \_\_\_\_\_

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by the Board of Supervisors: \_\_\_\_\_

Approved as to Form

Office of the County Counsel  
Orange County, California

By: Ray Diaz  
DocuSigned by: F3402AD6CC0E14AF...  
Deputy

**County of Orange Contract #MA-060-23010871 with  
Aviat U.S., Inc. pursuant to NASPO ValuePoint - Cooperative Purchasing Master  
Agreement Contract No. 00318  
For Public Safety Communications Products, and Solutions**

This Contract MA-060-23010871 is made and entered into upon execution of all necessary signatures between Aviat U.S., Inc., having its principal place of business at 200 Parker Dr., Suite C100A, Austin, TX 78728 (referred as “Contractor”), and the County of Orange, operating through its Sheriff-Coroner Department, a political subdivision of the State of California, with a place of business at 320 N. Flower Street, Ste. 108, Santa Ana, CA 92703 (referred to as “County”) which are sometimes individually referred to as “Party” or collectively referred to as “Parties”.

**ATTACHMENTS**

This Contract is comprised of this document and the following Attachments, which are incorporated by reference into this Contract:

- Attachment A- Scope of Work
- Attachment B – Compensation and Payment Terms
- Attachment C – NASPO ValuePoint - Cooperative Purchasing Master Agreement  
Contract No. 00318
- Attachment D – State of California Participating Addendum Number 7-22-70-49-02
- Attachment E – Equipment List

**RECITALS**

**WHEREAS**, the State of Washington has issued a Cooperative Purchasing Master Agreement Contract No. 00318 through NASPO ValuePoint for Public Safety Communications Products, and Services now in effect from July 1, 2021 through and including December 31, 2026, renewable for twenty-four (24) months, included in Attachment C; and

**WHEREAS**, the State of California has issued a Participating Addendum No. 7-22-70-49-02 on behalf of all California political subdivisions/local governments to purchase Public Safety Communications Products, and Services pursuant to NASPO ValuePoint Cooperative Purchasing Master Agreement Contract No. 00318, included in Attachment D; and

**WHEREAS**, COUNTY and CONTRACTOR desire to enter into a Contract for CONTRACTOR to perform services under the NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318; and

**WHEREAS**, Contractor is willing to provide the services specified in this Contract to the County of Orange, Sheriff-Coroner Department;

**NOW, THEREFORE**, the Parties mutually agree as follows:

**DEFINITIONS**

“State of Washington” and “State” as used in Attachment C shall mean County of Orange, its employees and authorized representatives for purposes of this Contract.

## ARTICLES

1. **Scope of Contract:** The terms and conditions of this Contract, including those in its Attachments, specifies the terms and conditions by which Sheriff-Coroner Department will procure services in connection with the NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318 from the Contractor, hereinafter referred to as "Services" as more fully detailed in Attachment A, Scope of Work.
2. **Precedence:** In the event of a conflict between the terms and conditions in this Contract and terms and conditions in the Attachments, the conflict shall be resolved by giving precedence first to the terms and conditions of this Contract, then the terms and conditions of any Attachments.
3. **Term of Contract:** This Contract shall commence upon execution of all necessary signatures, and shall be effective for a ten (10) year term, unless otherwise terminated by County.
4. **Taxes:** Unless otherwise provided herein or by law, price quoted does not include California state sales or use tax. Out-of-state Contractors shall indicate California Board of Equalization permit number and sales permit number on invoices, if California sales tax is added and collectable. If no permit numbers are shown, sales tax will be deducted from payment. The Auditor-Controller will then pay use tax directly to the State of California in lieu of payment of sales tax to the Contractor.
5. **Compensation & Payment:** Contractor agrees to provide services in connection with the NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318 as set forth in Attachment A, Scope of Work, at the fixed discounted rates off Contractor's list price specified in the NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318. The maximum amount of compensation under this Contract shall not exceed the amount of \$15,563,513.02 for the contract term.
6. **Contingency of Funds:** Contractor acknowledges that funding or portions of funding for this Contract may be contingent upon State budget approval; receipt of funds from, and/or obligation of funds by the State of California to County; and inclusion of sufficient funding for the services hereunder in the budget approved by County's Board of Supervisors for each fiscal year covered by this Contract. If such approval, funding or appropriations are not forthcoming, or are otherwise limited, County may immediately terminate or modify this Contract without penalty. County shall be responsible for payment of all services and equipment provided up to and including the date of termination.
7. **Termination:** In addition to any other remedies or rights it may have by law, County has the right to immediately terminate this Contract without penalty for cause or after 30 days written notice without cause, unless otherwise specified. Cause shall be defined as any material breach of contract, any misrepresentation or fraud on the part of the Contractor. Exercise by County of its right to terminate the Contract shall relieve County of all further obligation.

Contractor may terminate this Contract for County's failure to perform any of its duties under the Contract after written notice of County's failure to perform under the Contract. County shall have forty-five (45) days to cure the cause of such failure after written notice has been provided by Contractor. In the event County fails to cure the cause of such failure, termination of the Contract shall be effective at the end of the forty-five (45) days cure period.

8. **Invoicing:** Vendor shall reference Contract Number MA-060-23010871 on all invoices. Payment will be net 30 days after receipt of an invoice in a format acceptable to the County and verified and approved by the agency/department and subject to routine processing requirements. The responsibility for providing an acceptable invoice rests with the contractor.

Invoices shall be submitted to the following location:

County of Orange  
 Sheriff Coroner/Technology Division  
[technologyinvoices@ocsheriff.gov](mailto:technologyinvoices@ocsheriff.gov)

9. **Governing Law and Venue:** This Contract has been negotiated and executed in the State of California and shall be governed by and construed under the laws of the State of California. In the event of any legal action to enforce or interpret this Contract, the sole and exclusive venue shall be a court of competent jurisdiction located in Orange County, California, and the parties hereto agree to and do hereby submit to the jurisdiction of such court, notwithstanding Code of Civil Procedure Section 394. Furthermore, the parties specifically agree to waive any and all rights to request that an action be transferred for trial to another county.
10. **Notices:** Any and all notices permitted or required to be given hereunder shall be deemed duly given (1) upon actual delivery, if delivery is by hand; or (2) upon delivery by the United States mail if delivery is by postage paid registered or certified return receipt requested mail. Each such notice shall be sent to the respective Party at the address indicated below or to any other address as the respective Parties may designate from time to time.

For Contractor: Aviat U.S., Inc.  
 200 Parker Drive, Suite C100A  
 Austin, TX 78728  
 Attn: Hermogenes Decano  
 Attn: Legal Department  
 Ph: 949-707-2710  
 Email: Hermogenes.Decano@aviatnet.com

For County: County of Orange  
 Sheriff-Coroner Department/Purchasing Services Bureau  
 320 N. Flower Street, 2<sup>nd</sup> Floor  
 Santa Ana, CA 92703  
 Attn: Olivia Prudencio. Supervising PCS  
 Ph: 714-834-6687  
 Email: oprudencio@ocsheriff.gov

**Insurance Provisions:** Prior to the provision of services under this Contract, the Contractor

agrees to carry all required insurance at Contractor's expense, including all endorsements required herein, necessary to satisfy the County that the insurance provisions of this Contract have been complied with. Contractor agrees to keep such insurance coverage current, provide Certificates of Insurance, and endorsements to the County during the entire term of this Contract.

Contractor shall ensure that all subcontractors performing work on behalf of Contractor pursuant to this Contract shall be covered under Contractor's insurance as an Additional Insured or maintain insurance subject to the same terms and conditions as set forth herein for Contractor. Contractor shall not allow subcontractors to work if subcontractors have less than the level of coverage required by County from Contractor under this Contract. It is the obligation of Contractor to provide notice of the insurance requirements to every subcontractor and to receive proof of insurance prior to allowing any subcontractor to begin work. Such proof of insurance must be maintained by Contractor through the entirety of this Contract for inspection by County representative(s) at any reasonable time.

All self-insured retentions (SIR)'s shall be clearly stated on the Certificate of Insurance. Any SIR in excess of Fifty Thousand Dollars \$50,000 shall specifically be approved by the County's Risk Manager, or designee. The County reserves the right to require current audited financial reports from Contractor. If Contractor is self-insured, Contractor will indemnify the County for any and all claims resulting or arising from Contractor's services in accordance with the indemnity provision stated in this contract.

If the Contractor fails to maintain insurance acceptable to the County for the full term of this Contract, the County may terminate this Contract.

### **Qualified Insurer**

The policy or policies of insurance must be issued by an insurer with a minimum rating of A- (Secure A.M. Best's Rating) and VIII (Financial Size Category as determined by the most current edition of the **Best's Key Rating Guide/Property-Casualty/United States or ambest.com**).

If the insurance carrier does not have an A.M. Best Rating of A-/VIII, CEO/ Risk Management retains the right to approve or reject a carrier after a review of the company's performance and financial ratings.

The policy or policies of insurance maintained by the Contractor shall provide the minimum limits and coverage as set forth below:

### **Coverage**

### **Minimum Limits**

Commercial General Liability

\$1,000,000 per occurrence  
\$2,000,000 aggregate

Automobile Liability including coverage for  
or scheduled, non-owned, and hired vehicles

\$1,000,000 combined owned  
single limit each accident

Workers Compensation	Statutory
Employers Liability Insurance	\$1,000,000 per accident or disease

Increased insurance limits may be satisfied with Excess/Umbrella policies. Excess/Umbrella policies when required must provide Follow Form coverage.

### **Required Coverage Forms**

The Commercial General Liability coverage shall be written on occurrence basis utilizing Insurance Services Office (ISO) form CG 00 01, or a substitute form providing liability coverage at least as broad.

The Business Auto Liability coverage shall be written on ISO form CA 00 01, CA 00 05, CA 0012, CA 00 20, or a substitute form providing coverage at least as broad.

### **Required Endorsements**

The Commercial General Liability policy shall contain the following endorsements, which shall accompany the Certificate of Insurance:

- 1) An Additional Insured endorsement using ISO form CG 20 26 04 13, or a form at least as broad naming the County of Orange its elected and appointed officials, officers, employees, and agents as Additional Insureds, or provide blanket coverage, which will state As Required by Written Contract.
- 2) A primary non-contributory endorsement using ISO form CG 20 01 04 13, or a form at least as broad evidencing that the Contractor's insurance is primary, and any insurance or self-insurance maintained by the County shall be excess and non-contributing.

The Workers' Compensation policy shall contain a waiver of subrogation endorsement waiving all rights of subrogation against the ***County of Orange, its elected and appointed officials, officers, employees, and agents*** or provide blanket coverage, which will state ***As Required by Written Contract.***

All insurance policies required by this Contract shall waive all rights of subrogation against the ***County of Orange, its elected and appointed officials, officers, employees, and agents*** when acting within the scope of their appointment or employment.

In the event of any material change to the insurance coverage including but not limited to policy cancellation or non payment, Contractor shall provide County with an updated certificate of insurance.

Failure to provide an updated insurance certificate may constitute a material breach of the Contract, upon which the County may suspend or terminate this Contract.

The Commercial General Liability policy shall contain a severability of interests clause also known as a "separation of insureds" clause (standard in the ISO CG 0001 policy).



Insurance certificates should be forwarded to the agency/department address listed on the solicitation.

If the Contractor fails to provide the insurance certificates and endorsements within seven (7) days of notification by CEO/Purchasing or the agency/department purchasing division, award may be made to the next qualified vendor.

County expressly retains the right to require Contractor to increase or decrease insurance of any of the above insurance types throughout the term of this Contract. Any increase or decrease in insurance will be as deemed by County of Orange Risk Manager as appropriate to adequately protect County.

County shall notify Contractor in writing of changes in the insurance requirements. If Contractor does not provide acceptable Certificates of Insurance and endorsements to County incorporating such changes within thirty (30) days of receipt of such notice, this Contract may be in breach without further notice to Contractor, and County shall be entitled to all legal remedies.


The procuring of such required policy or policies of insurance shall not be construed to limit Contractor's liability hereunder nor to fulfill the indemnification provisions and requirements of this Contract, nor act in any way to reduce the policy coverage and limits available from the insurer

11. **Indemnification:** Contractor agrees to indemnify, defend with counsel approved in writing by County, and hold County, its elected and appointed officials, officers, employees, agents and those special districts and agencies which County's Board of Supervisors acts as the governing Board ("County Indemnitees") harmless from any claims, demands or liability of any kind or nature, including but not limited to personal injury or property damage, arising from or related to the services, products or other performance provided by Contractor pursuant to this Contract. If judgment is entered against Contractor and County by a court of competent jurisdiction because of the concurrent active negligence of County or County Indemnitees, Contractor and County agree that liability will be apportioned as determined by the court. Neither party shall request a jury apportionment.


**Signature Page**

The Parties hereto have executed this Contract# MA-060-23010871 on the dates shown opposite their respective signatures below

**Contractor\*: Aviat U.S., Inc.**

By:  Title: VP Global Finance & IT  
Print Name: Keith Fanneron Date: 3/21/2023

**Contractor\*: Aviat U.S., Inc.**

By:  Title: Sr. VP and Chief Financial Officer  
Print Name: David Gray Date: 3/21/2023

*\*If the contracting party is a corporation, (2) two signatures are required: (1) signature by the Chairman of the Board, the President or any Vice President; and one (1) signature by the Secretary, any Assistant Secretary, the Chief Financial Officer or any Assistant Treasurer. The signature of one person alone is sufficient to bind a corporation, as long as he or she holds corporate offices in each of the two categories described above. For County purposes, proof of such dual office holding will be satisfied by having the individual sign the instrument twice, each time indicating his or her office that qualifies under the above described provision.*

*In the alternative, a single corporate signature is acceptable when accompanied by a corporate resolution demonstrating the legal authority of the signature to bind the company.*

**County Of Orange**

A political subdivision of the State of California




Sheriff-Coroner Department

By: \_\_\_\_\_ Title: \_\_\_\_\_  
Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

Approved by the Board of Supervisors: \_\_\_\_\_

Approved as to Form  
Office of the County Counsel  
Orange County, California

By:  Ray Diaz 03/22/2023  
Deputy

File Folder: 2375102

## ATTACHMENT A

### Scope of Work

#### 1. Overview

This Scope of Work is for a 10-year Microwave Upgrade Agreement (MUA) between County and Aviat Networks. This necessary 10-year MUA will bring up old and unsupported Microwave radio transport equipment currently being used by CCCS 800 MHz P25 System to a vendor-supported and updated technology. Most of these equipment were installed in 2008 and have been declared to have reached End-of-Life (EOL) since 2020.

This MUA is spread out over a period of 10 years. In the first 2 years, Contractor will replace existing County's Aviat/Harris radio and Juniper MPLS router equipment. In addition, Contractor will design, engineer, coordinate, supply and install new Microwave radio paths for 20 Dispatch/PSAP sites in Orange County. Contractor is also required to configure and integrate the new MPLS router they supplied with County's existing Motorola Astro 2020.1 P25 Trunk Radio System and Dispatch Network. In the last 2 years, Contractor will refresh all the Microwave radio to the latest and greatest RF equipment during that time.

#### 2. Purpose of Scope of Work

The purpose of this SOW is to define the equipment, services, and materials to be supplied by Contractor for the turnkey upgrade of the existing Aviat/Harris Microwave Radio network. This Microwave radio network is used primarily to provide transport for voice and data associated with the Motorola Astro 2020.1 P25 Trunk Radio System. Contractor is required to supply new digital Microwave radio and its ancillaries such as antenna, waveguide, and dehydrator.

This is a "Turn Key Project". All requirements of this project, except where noted in this SOW are to be provided by Contractor. No part or performance requirement of a scope of work or other requirement of this project may be assigned to County, except where specifically noted in this SOW. The Contractor shall include all equipment, services, and material for a complete and fully operational system that meets the interface and performance requirements specified in this SOW.

#### 3. SOW Amendment Procedure

County will maintain the SOW with formal documentation denoting agreed upon changes. SOW revisions may result from system changes or documentation updates, which shall strictly follow the Change Order process agreed in writing by County.

#### 4. System Description

This MUA Scope of Work assumes the following starting point for the microwave network:

- 28 total existing microwave hops
- 17 loop hops, 11 spur hops
- 24 hops of Constellation radios
- 4 hops of Eclipse IRUv3
- Juniper routers

Over the 10 year MUA program, Contractor is offering Life Cycle Services and Advanced Technology Package with each package's scope of work summarized in table 4.1 below.

**Table 4.1**

OFFERING	YEAR									
	1	2	3	4	5	6	7	8	9	10
<b>AVIAT LIFE CYCLE SERVICES</b>										
24 x 7 x 365 Technical Support	√	√	√	√	√	√	√	√	√	√
24 x 7 x 365 Software Access and Install	√	√	√	√	√	√	√	√	√	√
Hardware Repair	√	√	√	√	√	√	√	√	√	√
Advance Replacement	√	√	√	√	√	√	√	√	√	√
Repair Logistics	√	√	√	√	√	√	√	√	√	√
Remote Software Upgrade	√	√	√	√	√	√	√	√	√	√

OFFERING	YEAR									
	1	2	3	4	5	6	7	8	9	10
<b>ADVANCED TECHNOLOGY PACKAGE</b>										
Network Hardware and Technology Upgrades	√	√								
RF Hardware and Technology Upgrades	√	√							√	√
Antenna and Waveguide	√	√								
Frequency Protection	√	√	√	√	√	√	√	√	√	√
Project Management	√	√	√	√	√	√	√	√	√	√
Design and Network Engineering	√	√							√	√
Installation, Integration and Training	√	√							√	√
Training		√			√				√	
Testing and Optimization	√	√							√	√

Contractor will supply equipment and materials and provide services (“Services”) outlined in this MUA as may be required for the period specified in the Contract. The Services will be provided in conformity with the terms, conditions, specifications and other requirements of this Contract. Each request for Services will be governed by the terms and conditions stated in this Contract.

This MUA covers only the Contractor Products, which are enrolled at the start of the Contract or added periodically as part of the MUA equipment upgrades covered by this MUA. This MUA does not apply to any non-Aviat US products, which may be purchased under separate contract/agreement by County.

### **YEARS 1-10:**

This MUA program includes Lifecycle Support Services throughout all 10 years of this agreement which includes 24x7x365 Technical Support, Software Access, Advanced Replacement and Hardware Repair with logistics provided by Contractor as summarized in Table 4.1. Additionally, Frequency Protection plan and field software upgrades are also provided.

County and Contractor will work hand in hand to develop the following:

1. Migration Plan of the existing T1 and IP/MPLS traffic to the new radio and routing equipment,
2. Routing upgrades and optimization that includes developing new IP Address scheme if necessary, and
3. Improved RF bandwidth and reliability that meet or surpasses the minimum annual reliability of 99.999%.

Once the migration plan is in place, program management and field support will be provided for the implementation. The Migration Plan will consider the least amount of outage time to make sure that County’s end users will have minimal impact during project implementation and migration.

Contractor will deploy one (1) Network Integrator (NI) to download and test the latest version of the radio firmware for the duration of the contract.

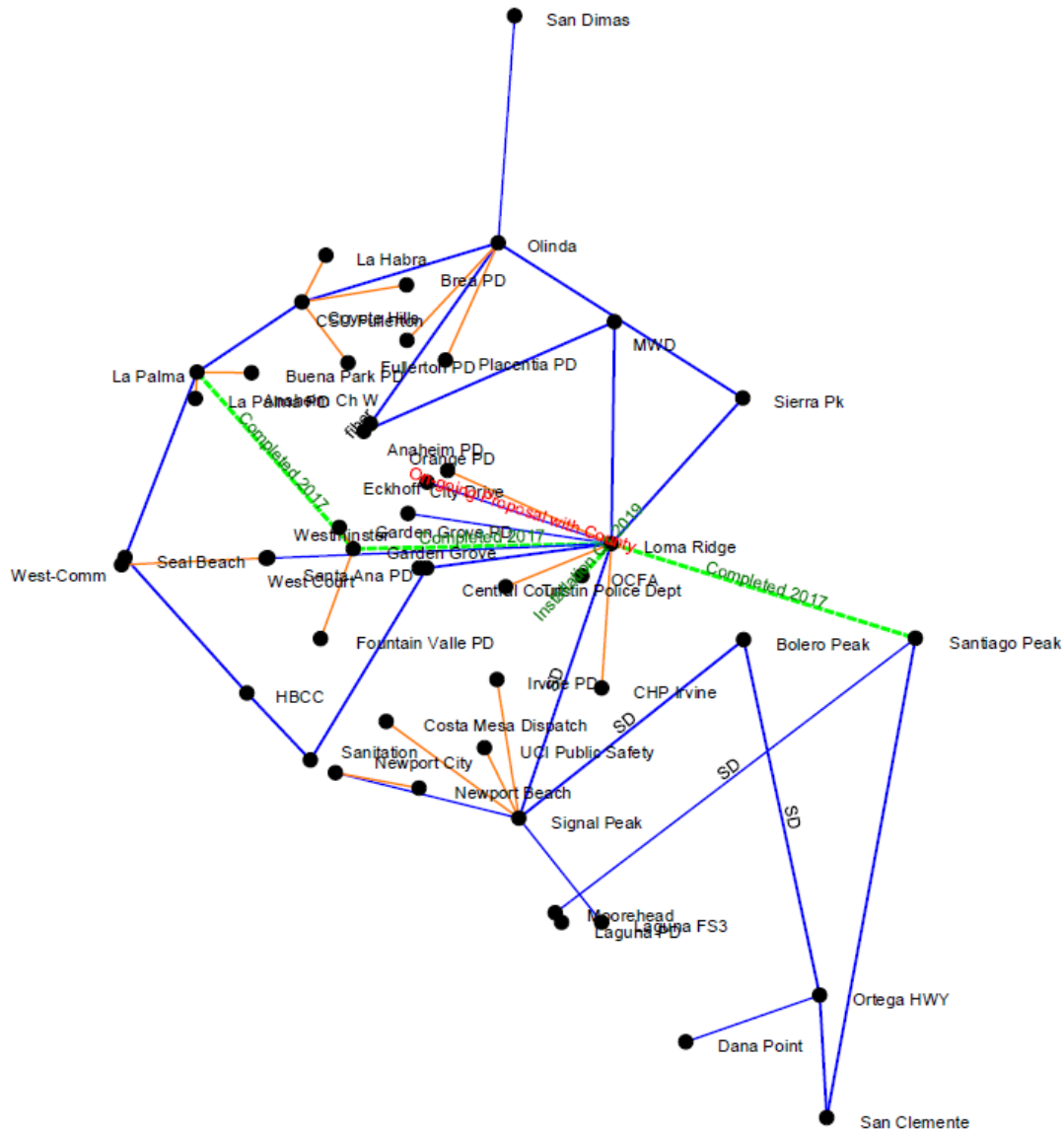
Frequency protection services will begin upon contract signature and NTP.

For reference, the following shows the proposed network topology with upgrade targets:

- 29 backbone paths will be upgraded/installed with IRUv4/INUe radios. The 29 paths include the existing 28 paths and a new path between MWD and Anaheim.
- Among the 29 backbone paths, 16 loop paths will be upgraded with 2+0 configurations. 4 space diversity paths will be upgraded with 2+2 configuration. The 9 spur backbone paths will be upgraded with 1+1 configuration.
- New installation for 20 dispatch paths. 19 paths are with one end IRUv4, the other end ODUv2. West-Comm-Westminster is the only dispatch path with ODUv2 at both ends. ODUv2 will be installed outdoor behind the antennas.

- New Aviat CTR8740 routers will be deployed at 63 sites, including 47 microwave sites and 16 leased line sites. MPLS will be configured to support the existing applications.
- Upgrade existing Provision Network Management System
- Deploy new Provision Plus NMS server
- At the end of the 10-year term, all IRUs/ODUs will be upgraded to latest models.

Figure 1 - Network Topology



## 5. General Requirements and Design Considerations

The following equipment and interface requirements were identified and agreed during meetings between County and Contractor regarding the upgrade of the digital microwave radio network.

- i. IRUV4/RAC70 will be installed at all backbone sites.
- ii. All dispatch sites shall utilize outdoor mount ODU.
- iii. All loop paths will be 2+0 (or 2+2 if space diversity is required) configured. Spurs will be MHSB (or SD/MHSB) configured.
- iv. Up to 8T1 add/drop will be equipped at each backbone site, with the only exception at Loma Ridge, where up to 32 T1 add/drop will be equipped.
- v. No T1 add/drop is needed at the Dispatch Sites.
- vi. Ethernet will be equipped at all sites. CE routers at each site will be provided by third party.
- vii. Dedicated INUe for each RF direction on the ring will be equipped for added redundancy and eliminate single point of failure. INUe can be shared for spur paths.
- viii. All new antennas to be installed will be CommScope antennas.
- ix. The digital microwave radio equipment for all backbone paths, including loop paths and backbone spur paths, will utilize Adaptive Coding and Modulation (ACM) operation. Dispatch spur paths will use fixed modulation.
- x. Party line OW from Raven will be installed.
- xi. 7'6" racks will generally be used at all sites unless the exceptions identified during engineering survey.
- xii. Dehydrators with IP interface from ETI will be installed at the backbone sites.
- xiii. Siteboss 550 will be installed at backbone sites.
- xiv. Existing Provision will be used with license upgrade.
- xv. GDS Package for Galaxy Pulsar (GE rectifier), Zyfer GPS equipment, and another SNMP based equipment to be determined later will be developed.

## 6. System Design Requirements

The microwave radio and routing equipment shall be designed and configured to support a high-reliability public safety radio backhaul network. The equipment shall be compatible with the Motorola 2020.1 Astro 25 Trunk Radio Network.

- 6.1 All microwave paths must utilize Monitored Hot Standby (MHSB) configurations with hitless receiver switching. In cases of Dual Channel/Dual Band 2+0 configuration, Layer 1 Link Aggregation algorithm should be utilized for hitless operation with the exception of few sites that requires a lot of T1 drops. In lieu of this, CTR 8740 will handle traffic aggregation.
- 6.2 Microwave paths shall be designed to meet or exceed 99.999% two way annual reliability with a bit error rate (BER) greater than or equal to  $10E-6$  at 237Mbps/256QAM. Contractor and County will discuss this again after path survey and frequency coordination if requirement or path design needs to be adjusted.
- 6.3 Microwave path reliability shall utilize the Vigants and Barnett 1975 reliability model and the Crane model for rainfall attenuation at 11GHz.
- 6.4 Multiplex and networking equipment for TDM traffic shall utilize equipment redundancy and protection switching protocols to protect data paths within 100ms. No single point of failure shall be allowed to render any data path in the microwave network to become inoperative or impaired.

- 6.5 Equipment reliability shall equal or exceed the 99.999% propagation reliability, assuming a 4 hour MTTR.
- 6.6 All microwave paths shall utilize the licensed 11GHz microwave band. The 6GHz microwave band may be utilized for Dual Band operation, if rainfall attenuation limits path reliability, or in cases where 11 GHz frequency is not available.
- 6.7 Path license modification, path analysis, engineering, coordination, and initial new path licensing are the responsibility of Aviat US.
- 6.8 It shall be Contractor's sole responsibility to ensure and guarantee the 99.999% reliability of each path at the 237Mbps/256QAM rate though this is dependent on some other factors that can only be determined after path survey and frequency coordination.
- 6.9 IP/MPLS router at all sites must have minimum of two (2) routing engine and two (2) power supplies. This can be accomplished either by a single fully redundant chassis i.e. with redundant routing engine and redundant power supplies (also known as High Availability (HA) router) or two individual router facing different direction in the loop.
- 6.10 Interfaces must be, at minimum, 1000 mbps capable in the form of copper port (RJ45) or an optical SFP for interconnect links.
- 6.11 Provider Edge (PE) interface must be RJ45 copper unless otherwise noted. It has to be capable of supporting 10/100 Mbps Full-Duplex operation with NO auto-negotiation.
- 6.12 All MPLS traffic must be encapsulated in an 802.1q VLAN tag so it could provide additional level of security by making sure that there will be no adjacencies formed between unintended peers. Also, this provides proper identification when packet capture is needed during troubleshooting.
- 6.13 All nodes must be scaled correctly and be able to meet the network convergence time not to exceed 500ms.
- 6.14 Routers should be able to implement egress rate shaping and QoS model that prevents the upstream transport link to be oversubscribed.
- 6.15 All traffic that passes through the node must be properly classified and prioritized for consistent service performance. Policing and traffic shaping should also be done to prevent queue overrun.
- 6.16 A Link Failure Detection mechanism such as BFD or equivalent must be used where necessary with maximum hello interval not to exceed 100ms with multiplier of 3 for a detection time of 300ms total.
- 6.17 Layer 3 VPN is required for all Motorola interconnect links. This could be implemented using BGP with a single Autonomous System (AS) with an ID from the private range.
- 6.18 Label Switched Paths (LSP) should have a primary and secondary paths configured unless there is no redundant link and Fast Reroute to be enabled and implemented.
- 6.19 Traffic Engineering should be implemented using Admin Groups or equivalent methodology.

## 7. Installation Requirements

All work shall be performed in a manner consistent with high quality commercial practice and in accordance with County installation standards.

- 7.1 All electronic equipment, transmission lines, equipment racks, antennas, and other tower and building attachments shall be grounded in accordance with Motorola Standard R-56 and local building codes.
- 7.2 All antenna feed points and RF transmission line are to be dry air pressurized via a dehydrator/compressor. Pressure/humidity faults must be reported to the Network Management System.
- 7.3 All antennas and tower attachments must be installed in accordance with ANSI/TIA-222G



for material, structural, wind, and ice loading in the geographical zone in which the tower or other attachment structure is located.

- 7.4 All old antennas, antenna mounts and mounting hardware, waveguides, waveguide tower hangers, and associated other attachments are to be removed from the tower or other structure and staged on pallets on the ground at the tower or other location by Contractor. Wherever possible, all antennas, equipment, and attachments are to be removed in good condition with the intent of being reused at other locations.
- 7.5 All pressurized lines and waveguides must be tested to manufacturer's specifications.
- 7.6 All antenna mounts will be of the three (3) points of attachment type with stiff arm or other equally ridged configuration to prevent movement of the antenna from set path azimuth and elevation. ODU antennas excluded.
- 7.7 Contractor shall provide at least one (1) complete set of replaceable modules, circuit boards, and, if appropriate, replaceable baseband/bandpass/multiplier filters for each utilized frequency.
- 7.8 Contractor shall provide complete sets of equipment service manuals for each type of equipment provided. At a minimum, service manuals must include all information required to troubleshoot and repair each system component down to the lowest field replaceable component level.

## 8. General Provisions

- 8.1 Contractor shall be responsible for all costs of shipping, storage, and other transportation required for all equipment to be installed.
- 8.2 Ownership/title to equipment will pass to County upon completion of installation at the County facilities.
- 8.3 Warranty for equipment will commence upon completion of acceptance testing or beneficial use, whichever occurs first and shall continue for the whole duration of this MUA. After the MUA expires, standard warranty for RF equipment should apply.
- 8.4 Contractor shall not make any exceptions to the standard warranty a part of the purchase contract due to any noted condition of any facility involved in the project.
- 8.5 Space for standard 19 inch mounting racks within the shelter will be provided. Racks shall be provided and installed by Contractor. Mounting space will be near, but not necessarily adjacent to, the current mounting locations of the microwave equipment. County will make every effort to provide adjacent mounting space, wherever possible.

## 9. Services

Contractor shall provide the project management, engineering, installation, and integration services required for this MUA. Contractor shall provide engineering and installation services necessary to fully integrate the new equipment into the Astro 25 Digital Radio Network, including the Juniper Networks MPLS backhaul network. Contractor shall integrate the new microwave radio equipment with the fault management system and order wire system.

Contractor provided engineering services include, but are not limited to:

- Project Management
- Network Design
- Microwave Path Design
- Project Engineering

Contractor shall also provide installation services for the installation of the Aviat microwave radio, ancillary equipment, network equipment, fault alarm equipment, and order wire. In addition, Contractor shall be responsible for installing outdoor ODUs, IF cabling, antennas, waveguide, and other equipment and hardware. Contractor will provide installation services including, but are not limited to:

- Aviat ODUs
- Aviat IDUs
- ODU/IDU IF cabling
- 19” Racks
- Dehydrators
- Order wire equipment
- Waveguide
- Microwave antennas
- Network Management System servers
- Routers

## 10. Project Implementation

The following section describes the scope and activities included on Aviat’s Advanced Technology Package (“ATP”). These scope and activities shall be further discussed by County and Aviat US to finalize the design and configuration prior to implementation of this MUA agreement.

### **YEARS 1 AND 2 - EXISTING SITES RADIO UPGRADE + NEW SITE DEPLOYMENT**

- Beginning from year 1 to year 2 of this MUA agreement, Contractor will upgrade 24 existing hops of Constellation radio to the latest technology - IRUv4/RAC70. These sites are:

Loma Ridge – Sierra Peak  
 Sierra Peak – Olinda  
 Olinda – Coyote Hills  
 Coyote Hills – La Palma  
 La Palma – Seal Beach  
 Seal Beach – Huntington Beach  
 Huntington Beach – Sanitation  
 Sanitation – Central Court  
 Central Court – Loma Ridge  
 Loma Ridge – Signal Peak  
 Signal Peak – Bolero Peak  
 Bolero Peak – Ortega Highway  
 Ortega Highway – San Clemente  
 San Clemente – Santiago  
 Santiago – Moorhead  
 Loma Ridge – Westminster  
 Loma Ridge – MWD

Loma Ridge – Eckhoff \*\*  
 Loma Ridge – City Drive \*\*  
 Signal Peak – Newport City Yard  
 Signal Peak – Fire Station 3  
 Olinda – Anaheim City Hall  
 Olinda – San Dimas  
 Ortega Highway – Dana Point

\*\* Loma Ridge – Eckhoff path has been planned to be relocated to the new Technology Center in Tustin and Loma Ridge – City Drive would be upgraded ahead of time due to unavailability of existing equipment's spare parts. Microwave Radio and components for these hops have been purchased ahead of time. Any excess budget allocated for these paths shall be credited back to County.

- Four (4) existing hops that have IRUv3/INUe named below would also be updated to the new radio model.

Loma Ridge - Santiago  
 Loma Ridge – Garden Grove  
 Garden Grove – La Palma  
 Loma Ridge – OCFA \*\*

\*\* Loma Ridge – OCFA path is already IRUv4/RAC 70 so no further upgrade is needed for this path. However, there is a secondary MW link that is using Constellation Radio that can be upgraded using the existing NTU at each end of the path. Decision will be made in the future if County wants to take this route.

- One (1) additional path from MWD to Anaheim PD shall be added as backbone capacity MW hop that creates another loop and offers added protection for Anaheim PD, Metronet, and Anaheim Utility Dispatch Centers as well as the P25 North Cell Sub-sites at Anaheim City Hall and MWD.

MWD – Anaheim PD

Thus, twenty nine (29) hops shall have a higher bandwidth path and will be defined as backbone. All antenna, waveguide and dehydrators shall be upgraded for these paths. Cross-polarized antenna will be used for hops that are on the Ring to accommodate added channel and bandwidth. Some sites may have to resort to dual band antenna or two separate antenna i.e. one antenna for 6 GHz and one for 11 GHz.

All these backbone paths will be using Adaptive Coding and Modulation (ACM) for added throughputs. 6 GHz paths will be designed with 30 MHz bandwidth while 11 GHz path will have 40 MHz bandwidth.

- During this period, Contractor shall also install new Microwave Radio link and CTR 8740 (or newer version) router to the following Dispatch Centers and PSAPs:

Santa Ana PD  
 Brea PD  
 La Habra PD  
 Fullerton PD  
 Fountain Valley PD  
 Garden Grove PD  
 Buena Park PD  
 La Palma PD  
 Orange PD  
 Tustin PD  
 Laguna PD  
 Newport Beach PD  
 Placentia PD  
 CSU Fullerton  
 West Comm (Seal Beach PD)  
 Irvine PD  
 Costa Mesa  
 UCI  
 Westminster  
 CHP Irvine

These paths shall be designed with static modulation and a throughput of 50 Mbps. They shall be in the 11 GHz band (as much as possible) with 10 MHz bandwidth. Dispatch Center sites shall be using ODU/INUe while the backbone sites will use IRUv4/INUe. Non-penetrating tripods at the Dispatch sites shall also be provided by Contractor.

Note: County have the right to cancel any of these sites if microwave shot is deemed not feasible. When this situation arise, Contractor will still supply and install CTR 8740 (or newer version) router to replace the Juniper router for sites that are being cancelled. The difference in the price quote budgeted shall be credited back to County.

## **YEAR 1 TO 2 – TDM AND IP MIGRATION**

To lessen bigger impact and downtime for the P25 and Mutual Aid System, this MUA will be implemented on a hop by hop basis. County and Contractor will determine which loop with Constellation radio in the backbone is best to start and will continue on until all the radio in that loop is completed. Consequently, T1 that were deemed essential, including passing-thru T1, will be moved and groomed to the new radio and the rest will be permanently eliminated. County predict that only one T1 per site will be provisioned with the exception of Loma Ridge being a hub site.

At the same time, existing Juniper MPLS network's interlink connections will be moved to the new INUe for every completed site. Along with this, existing Adtran WAN connections will be integrated to the new radio as well until after all backbone CTR 8740 (or newer version) routers have been commissioned, tested and ready to accept VPLS traffic. VLAN and traffic policing will be provisioned in the INUe to separate the Juniper MPLS traffic from Adtran network.

During this period, Contractor will also develop GDS package (MIB) for GE's Galaxy Pulsar controller, Zyfer GPS equipment and other equipment that will be determined later so County can migrate this equipment to Provision NMS (Network Management System).

### **YEAR 2 TO 3 – JUNIPER MPLS ROUTER TO CTR 8740 CUT-OVER**

Once all the old radios have been replaced, new radio at Dispatch Centers have been installed, and all the CTR 8740 (or newer version) routers have been commissioned and tested, Contractor will provision and configure the CTR 8740 (or newer version) for the correct parameters that are acceptable for Astro 2020.1 P25 Radio System (or current version) backhaul. This includes, but are not limited to:

- Configure router for MPLS operation
- Create VRF for each cell in the network and one for general use by IR and Dispatch Centers
- Configure BGP and Route Reflectors
- Configure QOS, traffic policing and Firewall for the router
- Provision new Layer 3 circuits and Label Switch Path
- Configure Routing Instances for each Customer Edge (CE) routers.
- Set up Provision Plus NMS for CTR 8740 (or newer version) alarm monitoring and configuration management (SDN Controller)

Contractor shall also install and configure CTR 8740 (or newer version) router to other radio and dispatch sites that will continue to use Metro Ethernet as backhaul along with the dispatch sites that are already using Microwave links but are not collocated. These sites are:

- John Wayne Airport
- OC Probation
- Tustin EOC
- Metronet
- Lenain Water Station
- Lewis Power Station
- Linda Vista Power Station
- Carbon Canyon
- Silverado Canyon
- Laguna Fire Station 2
- South Coast Medical Center
- Laguna Canyon ASR
- Huntington Beach Marine Safety

- Huntington Beach PD
- Technology Center (Tustin)

### **YEAR 3 TO 9 – TRAINING, FREQUENCY PROTECTION AND PROJECT MGMT**

Between years 3 to 9, Contractor will provide training for County and will continue to provide Frequency protection and Project Management. They will also continue to provide 24x7 Customer Support and premium warranty repair as summarized in Table 4.1.

### **YEARS 9-10 – RF UPGRADE**

During the last 2 years of this MUA agreement, Contractor shall do audit of all the sites. Contractor shall then replace all the Microwave radio installed in years 1 and 2 to the latest generation of RF equipment at that time. County will then have another 5 to 10 years (depending on the current trend) of supported radio. After year 10 and this MUA expires, County has a discretion to enter with Contractor's Extended Warranty services for continued equipment repair and support.

**ATTACHMENT B**  
**Compensation and Pricing Provisions**

1. **Compensation:** This is a firm-fixed fee Contract between the County and Contractor for Telecommunications Technology Solution Services and Products as set forth in Attachment C, NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318 and as modified herein by Attachment A, "Scope of Work."

The Contractor agrees to accept the specified compensation as set forth in this Contract as full payment for performing all services and furnishing all staffing and materials required, for any reasonably unforeseen difficulties which may arise or be encountered in the execution of the services until acceptance, for risks connected with the services, and for performance by the Contractor of all its duties and obligations hereunder. The Contractor shall only be compensated as set forth herein for work performed in accordance with the Scope of Work and Payment Plan. **The County shall have no obligation to pay any sum in excess of the fixed rates specified herein unless authorized by amendment in accordance with this contract and NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318 Terms and Conditions.**

2. **Fees and Charges:** County will pay \$2,829,729.64 (Two Million, Eight Hundred Twenty-Nine Thousand Seven Hundred and Twenty-Nine Dollars and Sixty-Four Cents) shall be due in advance for year one (1). Thereafter, \$1,414,864.82 (One Million Four Hundred Fourteen Thousand Eight Hundred and Sixty-Four Dollars and Eighty-Two Cents) shall be due annually in advance, for years two (2) to ten (10) starting from the Effective Date of this Contract as follows:

<b>Annual Payment Plan</b>	
<b>Year 1</b>	\$2,829,729.64
<b>Year 2</b>	\$1,414,864.82
<b>Year 3</b>	\$1,414,864.82
<b>Year 4</b>	\$1,414,864.82
<b>Year 5</b>	\$1,414,864.82
<b>Year 6</b>	\$1,414,864.82
<b>Year 7</b>	\$1,414,864.82
<b>Year 8</b>	\$1,414,864.82
<b>Year 9</b>	\$1,414,864.82
<b>Year 10</b>	\$1,414,864.82

Total Contract shall not exceed \$15,563,513.02 for the contract term of ten (10) years.

	<b>YEARS 1 - 3</b>	<b>Pricing</b>
1.0	Microwave Radio Equipment, Software and Licensing	\$3,161,849
2.0	Network Management Equipment, Software, and Licensing	\$91,384
3.0	Antenna, Waveguide, and Dehydrator Systems	\$1,218,684
4.0	Routers	\$1,444,847
5.0	Provision+ NMS	\$425,854
6.0	Spares	\$262,280
7.0	Services	\$5,024,811
8.0	AvaitCare / Warranty and Support	\$1,432,585
9.0	Training	\$84,162
10.0	Freight	\$102,472
	<b>YEARS 9 - 10</b>	
11.0	Next Generation RFU upgrade Equipment	\$1,424,533
12.0	Spares for Next Generation RFU	\$61,220
13.0	Services	\$790,826
14.0	Training	\$168,324
15.0	Freight	\$7,529
	<b>Financials</b>	
16.0	Financials	-\$709,858
17.0	Sales Tax	\$572,011

3. **Firm Discount and Pricing Structure:** Contractor guarantees that prices quoted are equal to or less than prices quoted to any other local, State or Federal government entity for services of equal or lesser scope. Contractor agrees that no price increases shall be passed along to the County during the term of this Contract not otherwise specified and provided for within this Contract.



4. **Contractor's Expense:** The Contractor will be responsible for all costs related to photo copying, telephone communications and fax communications while on County sites during the performance of work and services under this Contract.
5. **Payment Terms:** Invoices are to be submitted in advance to the user agency/department to the ship-to address, unless otherwise directed in this Contract. Vendor shall reference Contract number on invoice. Payment will be net thirty (30) days after receipt of an invoice in a format acceptable to the County and verified and approved by the agency/department and subject to routine processing requirements. The responsibility for providing an acceptable invoice rests with the Contractor.

Payments made by the County shall not preclude the right of the County from thereafter disputing any items or services involved or billed under this Contract and shall not be construed as acceptance of any part of the goods or services.

6. **Taxpayer ID Number:** The Contractor shall include its taxpayer ID number on all invoices submitted to the County for payment to ensure compliance with IRS requirements and to expedite payment processing.
7. **Payment – Invoicing Instructions:** The Contractor will provide an invoice on the Contractor's letterhead. Each invoice will have a number and will include the following information:
  - a. Contractor's name and address
  - b. Contractor's remittance address, if different from 1 above
  - c. Contractor's Taxpayer ID Number
  - d. Name of County Agency/Department
  - e. Delivery/service address
  - f. Master Agreement No.
  - g. Agency/Department's Account Number
  - h. Date of invoice
  - i. Product/service description, quantity, and prices
  - j. Sales tax, if applicable
  - k. Freight/delivery charges, if applicable
  - l. Total

Invoice and support documentation are to be forwarded to:

County of Orange  
 Sheriff Coroner/Technology Division  
[technologyinvoices@ocsheriff.gov](mailto:technologyinvoices@ocsheriff.gov)

8. **Payment (Electronic Funds Transfer (EFT))**  
 The County offers Contractors the option of receiving payment directly to their bank account via an Electronic Fund Transfer (EFT) process in lieu of a check payment. Payment via EFT will also receive an Electronic Remittance Advice with the payment details via e-mail. An e-mail address will need to be provided to the County via an EFT Authorization Form. To request a form, please contact the agency/department representative listed in Section 9. Notices. Upon completion of the form, please mail, fax or email to the address or phone listed on the form.

**ATTACHMENT C**

**NASPO ValuePoint - Cooperative Purchasing Master Agreement Contract No. 00318**

(separate attachment)

**ATTACHMENT D**

**State of California Participating Addendum Number 7-22-70-49-02**

(separate attachment)

**ATTACHMENT E**

**Equipment List**

(separate attachment)